BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 12 1946

THE CONTRIBUTION OF ANATOMY TO THE WAR*

BY

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It is well recognized that in the war that has just ended scientists played a vastly more important part than in any previous war. In modern warfare even scientists whose subjects might seem to have only the remotest relation to military requirements are called in to give their aid. Thus the entomologist, who in peacetime studies the protective coloration of butterflies, finds his advice sought in working out the principles of camouflage. The archaeologist, who before the war excavated in remote and unfrequented parts of the world, is called upon to assist with his local knowledge of people and geography when those regions become the scene of active operations. The geologist finds himself taking part in a commando raid on the Normandy coast in order to obtain vital information about the nature of the subsoil.

In this lecture I propose to give a short survey of some of the contributions of anatomy to war problems. The survey must necessarily be brief and sketchy, since I can cover only a part of this interesting field of work. This will be apparent when I mention that in the Department of Anatomy at Oxford alone, apart from papers the publication of which was not prevented by security regulations, the number of confidential scientific reports and memoranda prepared by our staff of research workers during the war on behalf of Committees of the Medical Research Council, or of various Government Departments, etc., amounted to 104. If I here confine my attention mainly to the anatomical work done at Oxford, this is simply because I have a more intimate knowledge of it than of similar work carried out in other centres.

Anatomical Problems of Traumatic Surgery

The casualties of war necessarily focus attention on problems of traumatic surgery, not so much because these problems are essentially new, but because they may concern such large numbers of individuals in a short space of time. Thus, in every war, research workers tend to turn their attention once more to a consideration of the fundamental processes of the repair of damaged tissues and the restoration of disturbed function. No doubt each war introduces certain unusual elements into these problems, which are absent or relatively insignificant in the traumatic surgery of peacetime, such as gas gangrene, particular types of injury caused by high-velocity missiles, unusual kinds of head injury, and special features in peripheral nerve lesions; and all these continually raise new problems which require investigation. During this last war a great deal of work on fundamental processes of tissue repair has been carried out, and in many cases this has served to place clinical diagnosis and treatment on a much more sure foundation than hitherto. Since this type of work has not been governed by security considerations, most of it has been published and will be well known to the medical public. Brief reference may, however, be made to some of the results which have emerged from it.

Considering the prevalence and incapacitating effect of peripheral nerve injuries during the war, it is not surprising that this aspect of traumatic surgery has attracted a great deal of the attention of anatomists. The comprehensive programme of experimental research into problems of nerve regeneration carried out by Prof. J. Z. Young and his collaborators at Oxford has been particularly productive. As a result we have come to learn a great deal more about the rate of growth of nerve fibres; the factors which determine or influence their maturation; the comparative values in the surgical repair of nerve injuries of autografts, homografts, predegenerated nerve grafts, frozen grafts, etc.; the optimum time for surgical measures in the treatment of nerve injuries; the extent to which nerve trunks can be stretched without causing permanent damage; the factors influencing the recovery of function in the regeneration of motor nerves, and so forth.

On the sensory side the investigations of Dr. G. Weddell and his co-workers in the Department of Anatomy at Oxford have been equally illuminating. His demonstration of the complex pattern of cutaneous innervation, the multiple innervation of sensory spots, the local extension of nerve fibres into denervated areas, etc., has provided explanations of the anatomical basis of many of the sensory phenomena observed during the course of nerve regeneration. His studies of the electrical phenomena which occur in muscle at different stages of denervation and re-innervation have been of even more immediate importance, since they provide an accurate method, by means of electromyography, of assessing the extent of motor neuron damage in peripheral nerve lesions and of following the process of regeneration even before the first visible sign of returning function. The electromyograph has undoubtedly proved of great value in the diagnosis and prognosis of peripheral nerve lesions.

The problem of burns and their treatment is always a pressing one in wartime, and in the war just ended it became particularly insistent by reason of the types of weapon used. It is a remarkable fact, however, that at the beginning of the war very little information was available on the exact anatomical changes which occur in different degrees of burn, and their correlation with the toxaemic effects of the damage. The studies of Dr. E. H. Leach and his collaborators have served to fill up some part of this gap. They found, among other things, that the critical temperature required to produce irreversible damage to the skin is in the region of 50° C., if this is applied for three minutes. Histological evidence was also obtained that in burns of low intensity at least two visible substances are liberated from the damaged cells—a pyronine-staining substance and nucleoprotein. This liberation can occur within a few minutes of injury, and it is suggested that the pyronine-staining substance may have some relation to the H-substance of Lewis.

The demands upon the plastic surgeon in wartime are unhappily great, and the problems of skin-grafting become correspondingly more urgent. As is well known, the grafting of skin derived from *another* person is not successful, since the tissues do not survive transplantation between individuals of ordinary genetic diversity. It is clearly of great importance to learn what are the factors which determine this lack of survival of homografts, so that attempts may be made to neutralize them. The study of this "homograft problem" has been carried out in great detail by Dr. P. Medawar of the

* Hunterian Lecture given at the Royal College of Surgeons on Dec. 13, 1945.

Department of Zoology in the University of Oxford, and the results of this work will be found in the *Journal of Anatomy*. It was demonstrated, among other things, that the mechanism by which foreign skin is eliminated belongs to the category of actively acquired immunity reactions, and the various histological processes involved in the destruction of the homografts were elucidated. These observations have led to the hypothesis that the antibody generated by skin homografts is such that it specifically prevents the completion of nuclear division in the cells of the homologous grafted skin. Now that information of this sort is becoming available, means may be devised whereby the effect of the antibody can be counteracted, thus making possible the use of homografts in the future.

As in the 1914–18 war, so in the last war, the anaerobic infections of muscles in wounds of the limbs presented a serious and difficult problem to the surgeon, and the question once more arose—How important is the factor of ischaemia in this type of infection? In spite of the fact that the direct anatomical study of injected muscles usually shows abundant anastomoses between the various vessels of supply, so that the opportunities for the rapid establishment of a collateral circulation appear good, a few clinical observers had inferred from their acquaintance with injured muscles that the several arteries supplying a muscle behave functionally as end-arteries. Experimental studies on the functional efficiency of intramuscular anastomoses in animals have now provided confirmation of this point of view, for it was found possible to produce a local and sharply circumscribed area of ischaemic necrosis in certain muscles by interrupting one of the vessels of supply or even one of its main intramuscular branches. These observations led on to a study of the intramuscular vascular pattern in human muscles, for it became clear that the surgeon should have a knowledge of such details if, when incising a muscle, he wishes to avoid unnecessary damage. But a great deal of further work must be completed on this straightforward topographical problem before all the information we require is complete.

In the course of experimental work on the vascularization of muscles the observation was made that, under certain circumstances, the regenerative capacity of striated muscle is quite remarkable. Thus, as the result of devascularization, the lower two-thirds of the tibialis anterior of a rabbit may undergo practically complete necrosis; yet in the space of three months it may be reconstituted so perfectly by the downgrowth of new fibres from the upper end of the muscle that histologically it shows little difference from the normal. This work (the results of which will also be seen in the *Journal of Anatomy*) opens up a most interesting programme of study and suggests important possibilities in the future of muscle surgery.

Some of the anatomical problems of traumatic surgery which have been dealt with during the war have been briefly outlined above. Research workers engaged in such investigations have been fortunate, since there have been no security restrictions on the publication of their results. They have thus been able to obtain full recognition for their achievements. Their anatomical colleagues who have been engaged on work of much more vital importance for the war effort have been less fortunate. Their scientific papers have been circulated within only a comparatively small circle, in the form of confidential and secret documents. Yet it is right that others should be made aware of the extent and nature of their work during the war, much of which has been extremely arduous. Indeed, this consideration provides one of the reasons for giving this lecture.

Anatomical Problems Relative to Offensive and Defensive Operations

In the earliest days of the war, before the real fighting had actually begun, little was known of the effectiveness in action of some of the modern types of weapon. Of the unknown factors which these introduced into the problem of war injuries there were two of particular importance that caused a good deal of speculation—the effect of high-velocity missiles of small size, and of blast. When casualties were first experienced in the Army, and at home in air raids, many different opinions were expressed about these effects, and it soon became a matter of some urgency that they should be carefully studied by experiment and by the statistical analysis of data collected in the field. A programme of work directed to this end was initiated in the Department of Anatomy at Oxford and carried out under the immediate supervision of my colleague, Prof. Zuckerman, with the assistance of Dr. Delisle Burns and Dr. Krohn, and by the end of the war those engaged in it had expanded into a very busy team of research workers.

In the study of high-velocity missiles many experiments were carried out in which minute fragments of metal, weighing a small fraction of an ounce, were shot through media such as gelatin or the tissues of anaesthetized animals (the velocity being measured by the spark-photography method). These experiments demonstrated the "explosive" character of the wounds which such fragments could produce, and showed that the actual volume of damaged tissue in a wound of this kind might be many hundreds of times that of the projectile itself. The relatively large amount of tissue destruction, it appeared, is not due to the irregular shape of the missile, nor to any rotary movement which it undergoes. It is simply due to the lateral motion imparted to the particles in its track, these particles flying off radially and producing momentarily a central cavity of very low pressure. Further experiments demonstrated the vulnerability of different types of tissue to such missiles, depending on differences in their natural elasticity. Thus, comminuted fractures of the femur of a rabbit can occur even when the track of the high-velocity missile is more than 1 cm. from the bone. On the other hand, highly elastic structures, such as big arteries and to some extent nerves, are apt to escape severe damage unless they are directly hit by the missile.

These investigations were continued in order to determine the threshold incapacitating velocity for different parts of the body (protected or unprotected)—that is to say, the striking velocity of missiles necessary to produce incapacitating wounds. This required a preliminary study of the relative vulnerability of different parts of the body by reference to anatomical data and to shooting experiments with the use of such material as skulls filled with gelatin, portions of dead tissues, etc. Further, in order to get some information on the probable effectiveness of different types of weapon in the field, it became necessary to work out the mean projected area of the body which is exposed to missiles under fighting conditions. Such data were not easily come by, since, of course, in active operations in the field the body may occupy a variety of positions. However, several positions were recorded by photography and the projected areas of different parts of the body worked out. It was concluded that the mean projected area of the whole body would not exceed 4.2 sq. ft. (0.39 sq. metre) under operational conditions, that about 10 to 15% of this area represents the projection of vital organs (i.e., organs whose injury by small missiles would almost certainly cause immediate death), and that the effective vulnerable area to small fragments (that is to say, the area where immediately incapacitating wounds would be caused) amounts to about 2.8 sq. ft. (0.26 sq. metre).

It will now be apparent that by reference to (1) the relative vulnerability of different parts of the body, (2) the striking velocity of missiles necessary to produce incapacitating wounds, (3) the mean projected vulnerable area of the body, and (4) data regarding the fragmentation of explosive projectiles and the velocity of the fragments at varying distances, it is theoretically possible to estimate statistically the casualty-producing effects of the various kinds of explosive weapon. By such methods a standardized casualty rate was calculated indirectly for different types of weapon, this being defined as the average number of casualties produced where the density of the population is 1 per 1,000 sq. ft. (92.9 sq. metres). In the same way it was possible to estimate the vulnerable range of the fragments of any particular type of bomb or shell. Such estimates are not only of value in determining the tactical possibilities of weapons such as the anti-personnel bomb; they can also be applied to a calculation of the casualties likely to be experienced during air raids under different conditions. Further, they provide a basis for a computation of the probable effectiveness of body-armour and other methods of protection.

The study of the anatomical mechanisms involved in blast injuries was carried out, in the first place, on experimental animals. As a result of these observations Prof. Zuckerman,

in collaboration with other members of my department, was able to show that visceral injuries caused by blast are actually due to the direct impact of the positive-pressure wave on the body wall. The exposure of different parts of the body to the blast wave, and the protection of others by various materials such as sponge rubber, made it quite clear that, contrary to ideas which gained currency in the early part of the war, blast waves do not reach the viscera via the respiratory passages or other roundabout ways. It also became apparent that, with human beings, the threshold of lethal blast pressures was unlikely to be experienced except in the immediate vicinity of the explosion, when the danger of fatal injuries due to other causes (e.g., bomb fragments or violent displacement) would be very high indeed. These laboratory experiments were supplemented by systematic observations and the statistical analysis of the casualties caused by air raids. This aspect of the work increased as the air raids became more intensive, and by the end of the war quite an elaborate organization had been built up for collecting the necessary information. Attached to the Department of Anatomy was a team of field workers whose duty it was to go to those centres which were being exposed to bombing and to make casualty surveys on behalf of the Ministry of Home Security. Much praise is due to these young men and women for their work, which was often carried out under extreme difficulty, and, of course, was by no means without its dangers. The circumstances in which injuries were caused in air raids were subdivided into four categories: (1) primary effects due directly to the bomb itself—i.e., blast and splinters; (2) secondary effects due to displacement—i.e., being thrown violently by the force of the explosion and sustaining injuries by impact against adjacent structures; (3) tertiary effects due to secondary missiles such as flying debris or the collapse of a house; and (4) quaternary effects such as asphyxiation following burial, CO-poisoning, etc. The survey showed the interesting result that most air-raid casualties were due, not to the primary effects of explosion, but to secondary and especially tertiary effects, and in spite of earlier impressions, it must have been exceedingly rare for death or serious injury to be caused by blast alone. Indeed, the conclusion was reached that human beings are much more resistant to the primary effects of the blast than are most building materials—an expression of the remarkable elasticity of the tissues of the living body.

The results of the air-raid casualty surveys, as the latter developed more and more, soon passed far beyond strictly anatomical problems. They provided data of the most valuable kind for the information of those who were busy devising protective measures. For example, a statistical analysis of the information collected by the field workers showed the sort of circumstances under which injuries were most likely to be sustained, and thus how they might best be avoided; it enabled a quantitative comparison to be made of the relative safety of different types of shelter,* or the relative risks of injury in different parts of a house (i.e., top floor, ground floor, basement, etc.); and it also provided the basis for directions to rescue squads regarding the positions at an "incident" where they would be most likely to find casualties capable of surviving if rescued quickly, and to which, therefore, they should first give their attention.

In connexion with the study of the mechanical factors concerned in producing injury to the tissues, reference may be made to certain problems which arose from time to time during the war and which made it necessary to estimate the energy required to produce fractures of different types. Thus, some casualties were caused in the field by lumps of debris thrown up by bombs which burst below the surface of the ground. The effect of such impacts was investigated, partly by experiments on animals and partly by experiments with human skulls and limb bones, and as a result it was possible to give some idea of the military effectiveness of delay-fused bombs bursting in different kinds of soil. Another problem concerned the fractures of the ankle which were said to be due to the vertical component of a ground-shock wave or the sudden upward displacement of the deck of a ship caused by a heavy under-water explosion. In this case experiments were carried out with cadavers, with the object of assessing the value of certain protective measures which had been devised.

* An Anderson shelter was found in certain types of air raid to give 5 to 7 times the protection of a house, while strutted basements and trenches provided less than twice the protection of a house.

Fitting the Machine to the Man

The machines of modern war have become more and more complex and their mechanical efficiency and accuracy have correspondingly increased. Indeed, it is true to say that the position has now been reached where the limiting factor in the accuracy of an operation such as aiming at a moving target is not the machine but the man who operates it. If he is working at the slightest mechanical disadvantage himself he cannot make full use of the extreme degree of precision of which his machine is capable. The operator must be accurately in gear with his machine. In other words, individual machines and their operators should be integrated so as to produce a single entity working at maximum efficiency. Once this general principle is recognized it will be apparent that the anatomist is likely to be a very busy man in wartime; for each new design of gun-mounting, tank, director, etc., requires the attention of the anatomist in order to ensure that hand-controls, foot-controls, seating, and optical apparatus are accurately geared to the natural positions and movements of the human body, and that adjustments are available so that each part of the apparatus can be rapidly adapted to personnel of different body measurements. This type of research, which may be termed "fitting the machine to the man," has been carried out at several centres during the war. In the Anatomy Department at Oxford it has mainly been concerned with naval requirements, and a brief reference may be made to the sort of problem with which we were confronted.†

First of all it was necessary to make an extensive anthropometric survey of Service personnel in order to get adequate information on the body measurements and their range of variation which we required to know. These measurements were in many cases quite different from those which are customarily made in anthropometrical surveys; and indeed special methods, and in some cases special measuring apparatus, had to be devised. For example, we required to know the range of variation in the height of the eyes in the sitting or standing position, so that the eye-pieces of optical apparatus could be correctly positioned; the variations in different individuals of the position of the feet when the knees and hips are held at certain angles had to be studied in order to determine the optimum position of foot-controls; even such details as the width of the fist in gripping a hand-control must be known in order to determine the "knuckle-barking distance" where space is severely limited. This anthropometrical survey was carried out through the Department of Biological Research of the War Office with the collaboration of Dr. G. M. Morant.

The next problem involved the study of the amplitude of movement in those joints of the body which are specifically used in operating machines of different types, and in some cases also an assessment of the force which can be exerted by the operator at different phases of these movements. Such information is not available in textbooks, since in every case it applies to rather special circumstances. It is an interesting fact, also, that while anatomical textbooks may contain certain information regarding the movement of individual joints, they are not at all helpful in regard to the movements of joints in combination. Yet, just as it is extremely rare for a single muscle to act in isolation, so most natural movements of the human body require the co-ordinated activity of several joints together.

As an example of joint movements, we may refer here to the movements of the neck in following, say, an aeroplane through binoculars as it approaches and flies overhead. Consider the observer in the director of a battleship, whose duty it is to keep such a target fixed on the cross-wires of his sights. He sits looking through his binoculars and elevates or depresses his sight by turning a wheel. He is a most important man, since the aiming of the guns is determined by his move-

† Soon after the commencement of this work (which was carried out for the Medical Research Council, with the co-operation of gunnery officers attached to the Admiralty Gunnery Establishment and to H.M.S. *Excellent*) Dr. G. M. Weddell joined my department in order to take part in it. For the latter part of our programme he, with his assistant Dr. H. Darcus, has been mainly responsible.

ments. He should therefore be able to pin-point and follow his target with the greatest accuracy. But he cannot do this unless the pivoting of the binoculars is so adjusted that the movement of the eye-pieces in elevation and depression coincides with the natural movement of the eyes, and all straining is avoided. With the original position of the pivot we found that hardly more than 20% of personnel could elevate to 60° without strain, and that even with great straining only 75% could reach this level of elevation. It thus became necessary to analyse the neck movements afresh. This was done by cinematography. The natural track of the eye was plotted in a number of individuals of different build, and the average and the amount of variation within a 90% range of personnel determined. As might be expected, the movements of the neck in looking up and down are not simple. The centre of the movement up to about 40° elevation is in the neighbourhood of the atlanto-occipital joint, but at higher elevations it rapidly moves downwards along the spine. We found at first that by moving the pivot of the optical apparatus downwards and backwards a few inches the track of the eye-pieces corresponded much more closely to the natural track of the eyes. However, although with this new position 100% personnel could elevate to 60° without strain, not more than 60% could reach 90° even with straining, and with the development of methods of aerial attack on ships it had become an urgent requirement that operators should be able to follow their target accurately almost up to zenith. Moreover, the alteration in the position of the pivot which we suggested involved certain constructional difficulties. It was then found that the movement of the eye-pieces could be made to follow the average track of the eyes if a movable pivot was designed by fitting the sight with a cam mechanism so that above 40° elevation the binoculars would be raised with an accelerated speed. A model of this design, when tested out, proved very effective, for it enabled 90% of personnel to reach zenith, though not all could do this without a certain amount of straining.

To use a sighting apparatus efficiently, the construction of the seat in which the operator sits is a matter of extreme importance. Consider a tank-driver or a look-out on a ship, who during the course of an action may be subjected to the most violent movements and yet must somehow hold himself steady, so that he can continue to manipulate his controls and follow his target with accuracy. His ability to do so depends largely on the design of his seat. The requirements of such a seat are, briefly, as follows: (1) It must allow the operator to maintain a sitting position for periods of duty up to four hours without undue discomfort and fatigue. (2) It must permit maximum stabilization of the body while keeping the arms free to manipulate hand-controls and without restricting the mobility of the neck and upper part of the spine for sighting movements. (3) The seat level must be adjustable in relation to both the level of the binoculars and the level of the foot-rest, so as to accommodate individuals of different body dimensions. (4) It must combine lightness with mechanical strength. (5) It must stand up to very severe usage and be weatherproof.

It will thus be apparent that the problem of constructing the ideal seat is a complicated one, and we can here refer to only some of its aspects. First consider the shape of the seat. In the earlier days of the war the shaped seat, or ploughman's seat, seemed to be generally favoured for many purposes, and since its contour is meant to be adapted to the natural contour of the human bottom, it might be supposed to have the blessing of the anatomist. On the contrary, there are very serious anatomical arguments against it. In the first place, since the shape and dimensions of human bottoms vary from one individual to another, just as other parts of the body, a shaped seat can fit only one type—individuals possessing other types are bound to suffer when using the seat. Particularly is this the case with the "pommel" of the seat, which may cause serious pressure on the perineum of many individuals. Secondly, a shaped seat makes it impossible for the sitter to shift his position from time to time—a most necessary provision if fatigue and discomfort are to be minimized during long periods of duty. Thirdly, the shaped seat tends to distribute the pressure of the weight of the body over all parts of the bottom equally, and this is anatomically quite wrong. The ischial tuberosities are designed to take the greater part of the weight in the sitting position, so as to avoid undue pressure on the soft structures, muscles, nerves, and blood vessels in the neighbourhood, and it is interesting to note that a localized area of skin over the tuberosities, like that on the soles of the feet, is particularly well supplied with arterial blood so as to minimize the risk of local ischaemia as the result of prolonged pressure.

Taking everything into consideration, there is no doubt that the ideal seat should be flat, but covered by padding which has a degree of elasticity sufficient to distribute the weight of the body over as wide an area as possible surrounding the ischial tuberosities while at the same time allowing the maximum pressure to remain concentrated over the tuberosities themselves.

Another most important element in the ideal seat is the back-rest. This must provide support for the upper part of the trunk (taking some of the weight of the body in the relaxed position), it must be accurately placed so that counter-pressure from the feet in body stabilization can be most effectively maintained, and it must allow free mobility to the thoracic and cervical spine. The optimum position and shape of the back-rest were determined by reference to anthropometric surveys, by finding out the force which can be exerted by counter-pressure from the feet in different positions, and by actual experience in the use of working models. The curve of the back-rest must not only accommodate the broadest back without cutting into the shoulder-blades, while at the same time providing adequate lateral support to the narrow back—it must also be adapted to the man encased either in heavy Arctic clothing or in the light clothing of the Tropics. The pivoting of the back-rest is not without its importance. The rest must be so pivoted that it easily follows the changing contour of the back in sighting movements, and in leaning forwards or backwards. It can be estimated, from the fact that the force exerted against the back-rest by counter-pressure from the feet is considerably greater than that derived from the weight of the upper part of the trunk, that the pivot should be a certain distance below the level of the centre of the back-rest.

In the sitting position body stabilization is an essential preliminary if the observer is to do his work accurately, and the most satisfactory method of securing it is by counter-pressure between the feet against a foot-rest and the back against a suitable back-rest. Obviously, also, the position of the legs in which the maximum counter-pressure can be developed is the ideal one for stabilization, though compromises may be necessary where adjustments have to be made for the use of optical apparatus and where space is limited. But the more the position varies from the optimum the greater the output of energy necessary to maintain equivalent pressures, since the muscles are working at a decreasing mechanical advantage. By direct experiment Dr. P. Hugh-Jones (working for the Medical Research Council at Lulworth) found that the thrust which can be exerted from the feet rises with increasing knee angles, until a quite well-defined limiting angle is reached at about 165°. Above this limit the maximum thrust falls sharply. The mean thrust possible at 165° was found to be over 500 lb. (227 kg.). Why the critical angle for counter-pressure from the feet in body stabilization should be about 165° is at first sight not clear. But it seems to be due to the fact that, with a man of average dimensions sitting in such a position, the line of the thrust passes through the pivotal axis of the back-rest when the latter is in its optimum position. If the knees are bent at a smaller angle the thrust is directed above the back-rest, so that when exerting pressure with the feet there is a tendency (which has to be restrained) for the upper part of the body to be pushed back. Conversely, if the knees are held at an angle greater than 165° the thrust tends to tilt the body forwards.

This short account of a few of the problems which are involved in the attempt to fit the machine to the man will give some indication of the not unimportant part which the anatomist plays in the design of the modern apparatus of war. Many other problems of a similar type have also been engaging attention, such as the designing and placing of different kinds

of foot- and hand-controls, methods of man-handling heavy ammunition, and the determination of the most satisfactory means whereby human energy can be utilized as a source of power in gun mountings when the main power fails. Some of these problems present no great technical difficulty, but their solution often demands much arduous work and the results may make a very great difference to the efficiency of the men and their machines.

Application of Wartime Research Organizations to Peacetime Problems

The research organizations developed during the war for the study of anatomical and related problems have proved their worth by the fact that in a comparatively short space of time they have led to quite a number of significant advances in practical and theoretical knowledge. This being so, is it not desirable that organizations of a similar kind should be continued in times of peace? Many of the anatomical problems of war are also problems of peace, or they have their counterparts in the problems of peace. Nerve injuries, for example, are not uncommon in peacetime casualties, and even if the problems of their treatment have not the same immediate urgency for the community as in war, they certainly have the same degree of urgency for the individual. Again, the design of his seat and controls is of vital importance to the anti-aircraft gunner. But it is also of great importance to the long-distance lorry-driver in times of peace. Many other comparisons could be cited to emphasize the desirability for extending wartime organizations for research into peacetime, particularly in so far as these organizations provide for the closest possible liaison between the anatomical laboratory on the one hand, and on the other hand the clinician, the physicist, the designer of machinery, the operator of the machine, and so forth. But the continuance of research in peacetime at the rate and rhythm which it manifested in the last war depends on several factors. It depends on the availability of research personnel of high calibre, imbued with a community spirit comparable with that which characterized the research worker of the war, on financial support of the most generous kind, and on a directorate which not only ensures adequate co-ordination of workers in widely different fields of science but is also capable of supplying the inspiration necessary for successful team-work.

SYNTHETIC SUBSTITUTES FOR QUINIDINE

BY

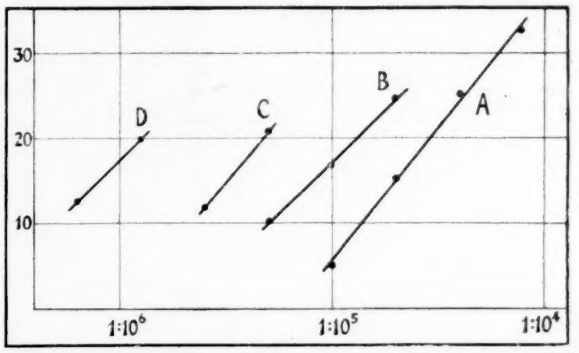
G. S. DAWES

(From the Department of Pharmacology, Oxford)

The present shortage of quinidine has led to a search for other drugs which might be used in the treatment of auricular fibrillation. The principal obstacle to the solution of this problem has been the lack of a suitable method for testing quinidine substitutes. Various methods have been devised (for references see Wiggers and Wégria, 1940) which are laborious, require large numbers of animals, and have a rough accuracy only. A new method has been introduced in which a comparison of different substances can be made on an isolated preparation of rabbit auricles.

Method

The auricles are carefully dissected from the heart of a rabbit and suspended in a bath of oxygenated Ringer-Locke solution at 29° C.; at the upper end the auricles are fixed by an enclosed pair of platinum electrodes, just above the surface of the bath. The contraction of the muscle is recorded by means of a silk thread running round a pulley immersed in the bath, and tied to the lower end of the auricles. The auricle contracts rhythmically by itself (at a rate of 80 to 120 per minute) and can also be driven by break-shocks from an induction coil at any desired speed, using a Lewis rotary contact-breaker. As the rate of electrical stimulation is increased the auricle follows each stimulus up to a point (between 250 and 350 a minute) at which it begins to drop beats (because the interval between shocks is less than the absolute refractory period). This maximal rate at which the auricle will follow electrical stimulation is reduced by the application, for ten minutes, of a given concentration of quinidine, and the percentage reduction of the maximal rate bears a linear relation to the logarithm of the concentration. The quinidine is only slowly eliminated from the auricle, and an interval of 45 to 60 minutes must be allowed between each observation; from 6 to 12 observations may be made on a single preparation. As the accompanying Chart shows, when the percentage reduction



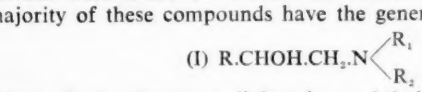
Ordinates = Percentage reduction in maximal rate at which auricle responds to electrical stimuli. Abscissae = Concentration of drug on a logarithmic scale: A, Quinine; B, Quinidine; C, 2-α-naphthyl-2-hydroxyethyl piperidine hydrochloride (II); D, Butethanol.

in the maximal rate is plotted against the logarithm of the concentration the slope of the linear relation obtained for various drugs is similar enough to allow their relative activity to be expressed in a single figure. Quinidine is used as the standard for comparison on each preparation.

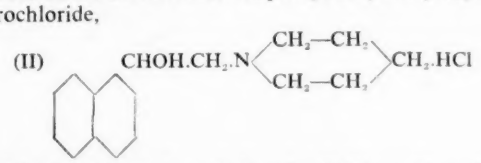
Results

The reduction of the maximal rate at which the auricles will follow an applied stimulus is due in the case of quinidine to a prolongation of the refractory period. The Chart illustrates the fact that quinine is only half as active as quinidine, and this is evidently the pharmacological basis for the superiority of quinidine in the treatment of auricular fibrillation.

When the question of quinidine substitutes was first considered an obvious starting-point was to take substances which had both a structural resemblance to quinidine and anti-malarial activity. Dr. Harold King and Dr. T. S. Work, of the National Institute for Medical Research, Hampstead, have made a number of such substances, and have placed at my disposal specimens of 22 of these compounds. It was surprising to find that all of them possessed some degree of quinidine-like activity, whether or not they had any antimalarial action. Indeed, several were more than twice as active as quinidine. The majority of these compounds have the general formula:



where R is benzene, diphenyl, naphthalene, quinoline, or methoxyquinoline, and where $N.R_1R_2$ is diethylamino, dibutylamino, or piperidine, or more complex variants of the quinuclidine structure. There are instances in the series in which the characteristic activity is retained when the amino-group is primary or secondary, as well as tertiary. The most promising member of the series was 2-α-naphthyl-2-hydroxyethyl piperidine hydrochloride,



which had 2.8 times the activity of quinidine. Some idea of the biological variation encountered in the method may be obtained from the five individual assays on different auricles from which this mean result was calculated; these were 2.4, 2.5, 2.5, 3.1, and 3.5.

Local Anaesthetics

The observation that so many substances of Type I prolonged the refractory period of the isolated rabbit auricle gave an

entirely new outlook to the problem of finding substitutes for quinidine. MacIntosh and Work (1941) showed that many substances of Type I were powerful local anaesthetics; indeed, 2-α-naphthyl-2-hydroxyethyl piperidine hydrochloride (II above) was considerably more active than procaine as a local anaesthetic either on intradermal injection into the guinea-pig or on local application to the guinea-pig's cornea. Not only do compounds of Type I bear a structural resemblance to the local anaesthetics in common use, but many local anaesthetics are known to reduce the irritability of the myocardium in a manner analogous to quinidine (Kochmann and Daels, 1908; Mautz, 1936; Beck and Mautz, 1937; van Dongen, 1938; Shen and Simon, 1938; Shen, 1939; Wiggers and Wégria, 1940; Burstein and Marangoni, 1940; Hirschfelder and Tamcales, 1942).

While some of these experiments have been criticized on the grounds that relatively few animals were used, that the means of producing fibrillation were erratic, and that, as Stutzman, Allen, and Orth (1945) observed, once ventricular fibrillation had begun, injection of procaine did not necessarily stop it, yet there were ample reasons for suspecting that local anaesthetics would have an action like quinidine. So many observers, working with such different techniques, could hardly otherwise have had such uniform success with procaine.

These various considerations led to a trial of procaine on the rabbit's auricle; it was found to be only slightly less active than quinidine itself (a mean figure of 80% of the activity of quinidine on three auricles). Up to date no fewer than 19 substances which possess local anaesthetic properties have been shown to reduce the maximal rate of the rabbit's auricle, like quinidine. These include five of the compounds described by MacIntosh and Work (1941); three tertiary-amino-alkyl esters of benzilic acid made in a search for atropine substitutes (Ing, Dawes, and Wajda, 1945); cocaine (6.2); phenacaine (4.5); and butethanol (11.4), the figures in brackets indicating the mean activity assayed on five auricles each, where quinidine = 1.0.

Bovet *et al.* (1939) have shown that F1262 (2-diphenyloxyethyl diethylamine hydrochloride) greatly reduces the ease with which ventricular fibrillation is induced in rabbits and dogs by electrical stimulation and that it prolongs the refractory period of the frog's heart. On the rabbit's auricle F1262 has 4.8 times the activity of quinidine (mean of five experiments); and when tested for local anaesthetic activity by intradermal injection into the guinea-pig and by the frog-plexus anaesthesia method it was found to be as active as procaine. This is not the only instance of a drug which has been tested first for quinidine-like activity on the auricle, and then, because it proved very active, been tested successfully for local anaesthetic activity.

Drugs with a Spasmolytic Action

Further consideration of the structural formulae of these compounds which had both local anaesthetic and quinidine-like activity recalled their structural similarity to trasentin and syntropan. These drugs were introduced primarily as substitutes for atropine in relieving spasm in the gastro-intestinal tract, urethra, and bladder. Trasentin is known to possess local anaesthetic activity (Gilman *et al.*, 1942), and both trasentin and syntropan were found to possess quinidine-like activity upon the auricle. Their activities relative to that of quinidine were: trasentin 60% and syntropan 130% respectively. Similarly one of the tertiary amino-alkyl esters of benzilic acid referred to above as having quinidine-like properties—benzilyl oxyethyl-diethyl ammonium chloride—was found by Gilman *et al.* (1942) and Lehmann and Knoefel (1942) to be a local anaesthetic and spasmolytic. These observations suggested that other spasmolytics might act in the same way. Papaverine was found to have 50% of the activity of quinidine. Since papaverine has a benzyl-isoquinoline structure this is not quite such a profound departure as might at first appear. This observation is of all the greater interest because Wégria and Nickerson (1942) have shown that papaverine, like quinidine, increased the "fibrillation threshold" in dogs; Elek and Katz (1942) also showed that it prolonged the refractory period and decreased the irritability of the auricles and ventricles in dogs.

These findings led to a reconsideration of the action of quinidine and procaine upon the intestine. Quinidine and procaine greatly reduce the action of acetylcholine and of potassium chloride upon the isolated rabbit's intestine in a concentration of from 1 : 100,000 to 1 : 25,000. They also cause a diminution in tone and in the pendular movements. No quantitative comparison has yet been undertaken between quinidine, procaine, trasentin, and atropine, but I think that there can be little doubt that if trasentin is to be regarded as a spasmolytic, quinidine and procaine should be classed in the same group. Similarly, Halpern (1938) and Lehmann and Knoefel (1942) have shown that many esters of amino-alcohols besides trasentin and syntropan are spasmolytics. Incidentally, Bovet *et al.* (1939) have shown that F1262 also reduces the action of acetylcholine upon the isolated intestine; this is of interest because F1262 is an example of an ether linkage between aromatic nucleus and basic group, whereas quinidine and procaine provide examples of carbinol and ester linkages.

Finally, since pethidine possesses both an aromatic nucleus and a basic group, and since it was known to have spasmolytic properties, it was tested both on the auricle and as a local anaesthetic. On the auricle it was found to have 80% of the activity of quinidine. On intradermal injection into the guinea-pig and by the frog-plexus anaesthesia method it was found to have about the same local anaesthetic activity as procaine.

Conclusion

The main purpose of this paper has been to illustrate two fundamental principles. The first is that quinidine-like activity, as measured by the rabbit-auricle method, is not a highly specific function of a particular molecular structure, but is very widely distributed among compounds possessing an aromatic (hydrophobic) group and a basic (hydrophilic) group joined by an ester, ether, or carbinol linkage, the nature of which does not seem to be of the first importance. Secondly, evidence has been brought forward to support the view that these compounds possess not only quinidine-like but also local anaesthetic and spasmolytic properties. This conclusion immediately raises the question why a good local anaesthetic (such as butethanol) should act like quinidine upon the auricle, and indeed be many times more active than quinidine. One simple explanation is that a drug which prolongs the refractory period of auricular muscle will also prolong the refractory period of nerve; if this process is continued far enough the nerve will cease to conduct, and local anaesthesia will ensue. The concentrations used support this suggestion. The concentration of procaine required to reduce the maximal rate at which the auricles will contract, without diminishing the force of contraction, is very low (1 in 100,000) compared with the concentration generally used to obtain local anaesthesia (1 in 400 to 1 in 100). A precisely similar argument might be applied to the mode of action of these drugs as spasmolytics.

This explanation of the action of, for instance, quinidine, procaine, and trasentin involves an important but not unreasonable assumption: that in living tissue, as illustrated by heart muscle, sensory nerve, and the complex arrangements of smooth muscle and nerve which make up the intestinal canal, the mode of conduction of excitation is essentially similar. Harvey (1939) has shown that quinine also prolongs the refractory period of striated muscle. By this essential similarity it is implied only that the biochemical mechanisms responsible for the conduction of excitation in these tissues are alike susceptible to reversible impairment by the action of these drugs.

One practical application of this hypothesis is of importance both clinically and in the study of new drugs of this type. If one of these compounds (structurally similar to quinidine, procaine, and trasentin) is intrinsically more active on peripheral nerves, then one would expect it to be more active on the auricle and as a spasmolytic. No doubt differences in the rate of absorption into and elimination from the various tissues cause divergencies in practice; but, broadly speaking, it is true that the more active local anaesthetics are more active on the auricle, and therefore, so far as drugs of this type are concerned, there is obviously a limit to the therapeutic index which can be reached. The better the local anaesthetic or spasmolytic, the more likely it is to have a toxic action on the heart.

Pethidine has hitherto been regarded essentially as a morphine substitute, with the very useful property of relaxing smooth muscle. The observation that pethidine possesses local anaesthetic and quinidine-like properties as well alters the position radically. Many of the local anaesthetics have a depressant

action upon the central nervous system: is pethidine a particularly favourable instance? Are its anaesthetic properties due to a prolongation of the refractory period in the central nervous system?

[A fuller account of this work, with details of relative activities and toxicities, from the point of view of choosing a quinidine substitute for clinical trial, will be published shortly.]

Summary

A method is described for measuring the potency of drugs as substitutes for quinidine, using the isolated auricles of the rabbit.

A large number of quinidine substitutes have been studied. These comprise many of the local anaesthetics and spasmolytics in common use. Some of these are very much more active than quinidine on the auricle—e.g., butethanol is more than ten times as active.

Pethidine possesses both local anaesthetic properties and a quinidine-like action on the auricle.

These findings suggest that the transmission of excitation is essentially similar in auricle and sensory nerve (and perhaps in the wall of the intestinal tract), in that it is susceptible to a reversible depression by the same drugs.

This work was carried out during the tenure of a grant from the Medical Research Council.

I am much indebted to Dr. H. King, F.R.S., and Dr. T. S. Work for the 22 quinidine analogues with which the investigation was begun; to Dr. Daniel Bovet for the F1262; and to Dr. H. R. Ing for three tertiary-amino esters of benzilic acid. I am also most grateful to Prof. J. H. Burn for the advice and encouragement which he has given throughout.

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POISONING BY AMANITA PHALLOIDES

BY

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Poisoning by fungi mistaken for edible mushrooms is comparatively rare in Great Britain. Reviewing the French literature, however, Ford (1923) collected 990 cases, 381 of which were fatal. The position was so serious in France that in 1925 a law was enacted providing that there should be inspectors at all market towns, to pass mushrooms as fit for human consumption. The efficacy of this law can be judged by the fact that in 1930 the mushroom inspector at Fougères died of fungus-poisoning.

Few cases have been reported in the medical press in this country, but in the London daily press the following cases have appeared in the past 15 years:

Date	Place	Fatal Cases	Associated Non-fatal Cases
Aug., 1930	Mildenhall	Boy of 6	
,, ,,	Cambridge	Man of 38	One
,, ,,	Methwold	3 girl guides	
July, 1933	Warrington	Girl of 7	
Aug., 1934	Monmouth	Woman of 45	
July, 1937	Leatherhead	Man of 36	Three
Aug., 1939	Stow Bedon	Father, son, and housekeeper	
Aug., 1941	Potton	Girl of 9	Three
Aug., 1942	Ponders End	Child of 5	
Oct., 1942	Chorley Wood	Man of 56	

A total of 21 cases, with 14 deaths.

Mycology

There are three species included in the genus *Amanita*—*Amanita phalloides*, *Amanita verna*, and *Amanita virosa*. *Amanita phalloides* (Fig. 1) is more commonly known as the

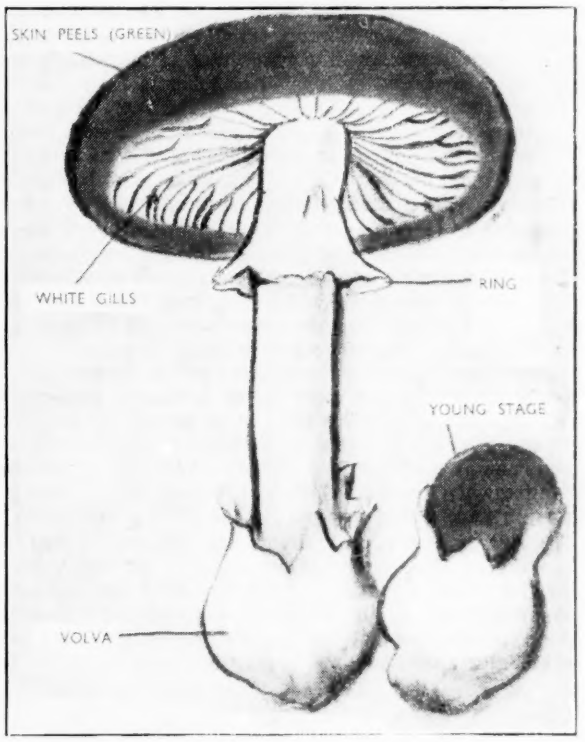

FIG. 1.—Death-cap (*Amanita phalloides*).

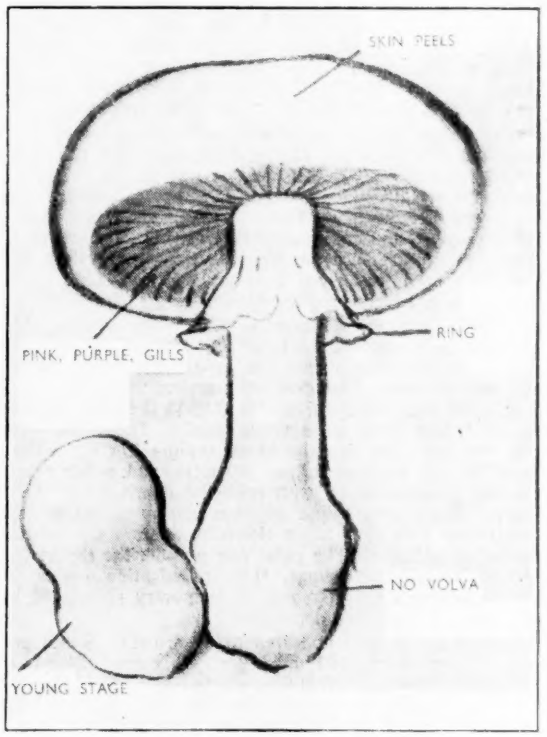

FIG. 2.—Mushroom (***Psalliota campestris***).

"death-cap." It can be found in any soil, but prefers chalk. It is often seen in association with oak trees. Typically, it is a large fungus with a smooth greeny-orange-coloured cap, and fine brown or black markings radiating from the centre. The gills on the under surface are white with a slight greenish or

yellowy sheen. The stalk is smooth, with a bulblike expansion at the base. In its upper part is a large thin white frill at the ring. The base is surrounded by the volva. When fresh this fungus is odourless and tasteless. It must be remembered that there are aberrant forms of the fungus; the colour may range from pure white to yellow.

The commonest edible fungus to be confused with *Amanita phalloides* is the field mushroom (*Psalliota campestris*) (Fig. 2). The chief characteristics of *Psalliota* are as follows: The cap is convex at first, and as it matures becomes flattened. It is white or brownish in colour, and is covered with silky fibrils. Later the surface of the cap becomes scaly. The stem is white, with a membranous ring. In the early stages the gills are white, becoming pink or purplish and finally almost black. The *Psalliota campestris* usually grows in meadows.

According to Hoechstetter (1943) and Nobécourt and Martin-Lipmann (1940) *Amanita phalloides* contains two toxins—one which is thermostable and resembles the action of phosphorus, and the other a haemolysin which is thermolabile. According to Ford, the haemolysin is rapidly destroyed by the action of heat, weak acids and alkalis, and digestive juices. He concluded that the haemolysin plays only a subsidiary part in the poisoning by *Amanita phalloides*, the main factor being the heat-resistant toxin. The injection of this toxin in an animal reproduces the signs and histological lesions of *Amanita phalloides* poisoning. Lynen and Wieland (1937) describe two other poisonous derivatives of *Amanita phalloides*, whose action does not appear to have played any part in the cases under review.

The four patients whose cases are here reported all died from liver damage, similar to that described by Vander Veer and Farley (1935) and Ahronheim (1938), and indistinguishable from acute yellow atrophy. In these cases the fungi had been cooked and the changes found at necropsy were undoubtedly due to the heat-resistant *Amanita* toxin.

Case I

Miss A., aged 26, a lorry-driver, was admitted to the Borough General Hospital, Ipswich, on Oct. 10, 1944, at 11.45 a.m. The evening before admission she had picked about 35 "mushrooms" in a wood near Ipswich; some of these were examined later and were found to be *Amanita phalloides*. The fungi were eaten for tea at 6 p.m. on Oct. 9. At about midnight she was taken ill with vomiting; diarrhoea started two hours later. The stools were frequent—at first formed, but later containing mucus only.

On examination she was peculiarly grey and cyanosed. Vomiting had stopped. The pulse was 72, the temperature 97°, respirations 20, and blood pressure 90/70. The tongue was thickly furred and the abdomen slightly distended; there was no tenderness. Nothing abnormal was detected in the chest. The patient was in fairly good condition, sensible, and not distressed. Gastric lavage was performed and 50 c.cm. of 50% glucose was given intravenously. Atropine 1/50 gr. (1.3 mg.) was given four-hourly. Ten units of insulin covered by 40 g. of glucose was administered thrice daily.

Next morning the patient started vomiting. She vomited 130 fl. oz. (3.6 litres) in 24 hours, and the pulse rose from 80 to 104. She was put on a glucose-saline drip. The urine was found to contain albumin and acetone. The dose of atropine was now reduced to 1/100 gr. (0.65 mg.) four-hourly. On Oct. 12 the signs of peripheral circulatory failure were more pronounced. The blood urea was 150 mg. per 100 c.cm. and the blood sodium 276 mg. The urine contained 20 mg. of albumin per 100 c.cm. and a fair number of hyaline and granular casts, with epithelial debris. No blood cells were seen. The glucose-saline drip was continued and nikethamide and percortone were given. An electrocardiogram showed no gross myocardial disturbance. The pulse rate was 80, the rhythm regular, and the tracings of low voltage. This investigation was carried out in view of Hyman's (1928) report of temporary right-sided bundle-branch block in *Amanita*-poisoning.

On Oct. 13 the patient appeared to be drowsy. Blood pressure, 100/60. Blood urea, 160 mg. per 100 c.cm. Blood count: R.B.C., 6,400,000/c.mm.; W.B.C., 6,000/c.mm.; haemoglobin, 120% (17.4 g. %); colour index, 0.9. In the afternoon her condition suddenly deteriorated; she became irrational and was difficult to keep in bed. The pulse was not perceptible. The blood pressure was 70/?, and during the night the patient was in coma. She died at 9.30 a.m. on Oct. 14—111 hours after eating the fungus.

Post-mortem Examination.—This was performed three hours after death. There was a peculiar cyanotic change in the face. On opening the body a very marked red staining was found—possible laking of the blood by *Amanita phalloides* toxin. Spectroscopic examination of the blood showed no abnormal bands. The pericardium showed large petechial haemorrhages. The right side of the heart was slightly dilated. The heart muscles appeared paler than normal, but were not friable. No valvular disease was found. The lungs were extremely congested and oedematous. Both apices showed consolidation and marked petechial haemorrhages. In the stomach was a very severe degree of haemorrhagic gastritis. The ileum and colon had undergone inflammatory changes, with petechial haemorrhages and some free blood. The liver was much reduced in size (weight 1,000 g.); it was pale yellow and very friable, showing obvious acute yellow atrophy. The kidneys were enlarged and whitish in colour, with petechial haemorrhages on the surface. The spleen appeared normal.

Histological Findings.—Major histological changes were found in the liver and kidney. In the former, except for occasional small sharply defined islands around some portal systems, the whole of the tissue was abnormal. The liver cells were pale and empty-looking, suggesting fatty changes. Their nuclei were hydropic and often distorted in shape. All degrees of karyolysis were seen. Many scattered liver cells had undergone necrosis, and dead cells containing yellow pigment were seen. Throughout the section there was a slight excess of polymorphonuclear leucocytes. The bile ducts and blood vessels appeared normal. Section of the kidney showed much parenchymatous degeneration and congestion, especially in the medulla. Yellow pigment was abundant, particularly at the base of the cells of the tubular epithelium. In the cortex the tubules were more widely separated than usual, probably by oedema of the interstitial tissue, and there were many dilated vessels and lymphatics.

Case II

Mrs. B., aged 38, was admitted to the Borough General Hospital, Ipswich, on Oct. 10, 1944, at 11.45 a.m., with exactly the same history as Case I. On examination she was rather cyanosed and had continuous diarrhoea and vomiting. She was treated with atropine 1/50 gr. (1.3 mg.) and atropine 1/100 gr. (0.65 mg.) four-hourly. The stomach was washed out and magnesium sulphate given. Ten units of insulin covered with 40 g. of glucose was administered thrice daily, also 300 g. of glucose by mouth. On Oct. 11 the vomiting appeared to be controlled by atropine. There were frequent offensive mucoid stools and the patient was still very cyanosed.

On Oct. 12 the blood urea was 140 mg. per 100 c.cm. and the blood sodium 260 mg. Urine: No red or white ceils; a large number of hyaline casts were present; albumin, 20 mg. per 100 c.cm.; culture remained sterile. Vomiting did not recur, but the patient was very weak and complained of pain in the back of the chest. During the day peripheral circulatory failure set in, the pulse became imperceptible, and the blood pressure could not be recorded. The patient was orthopnoeic and shocked, and coarse crepitations could be heard at both bases. Nikethamide and percortone were given, but the patient's condition continued to deteriorate, and she died at 10 p.m.—76 hours after eating the fungus.

The necropsy findings were exactly the same as in Case I. Here again the peculiar red laking effect of the blood was seen. There was no blood-clotting. Spectroscopic examination of the blood before and after death showed no evidence of any abnormal pigment. The histological findings of the liver and kidney were the same as in Case I.

Case III

A Polish Jewess aged 57 was admitted to St. Charles's Hospital at 10 a.m. on Sept. 26, 1944, with a history of having eaten "mushrooms" collected at Henley-on-Thames. The day before admission the daughter of the house cooked some of these "mushrooms," but put away four or five, which she distrusted. The family partook of a meal of the "mushrooms" with no ill effects. The same evening the deceased prepared the doubtful "mushrooms" by frying them in butter, and ate the lot herself. About eight hours after the meal she was taken ill with severe abdominal pains, diarrhoea, and vomiting. She was admitted to the hospital at 10 a.m. the next morning and was given a dose of castor oil.

About 1½ hours after admission her condition rapidly deteriorated, with exacerbation of diarrhoea and vomiting and pain in the epigastrium and the right iliac fossa. The pulse was rapid and feeble, and the systolic blood pressure was 70 mm. Hg. The diastolic pressure did not register. The patient was almost pulseless. Throughout Sept. 27 she was still almost pulseless, vomiting mucus, and had frequent diarrhoea. Intravenous plasma was given. On Sept. 28 diarrhoea ceased and some fluid was retained by mouth; the pulse continued to be feeble. On Sept. 29 her condition was much the same, but she became restless during the night. On Sept. 30 the patient was alternately restless and drowsy until she lapsed into coma and died at 11.35 p.m.—126 hours after the fatal meal.

Necropsy was performed two days later. The body was that of an adequately nourished adult woman. She was cyanosed and of ashen-grey complexion. The meninges were very congested. Several

small petechial haemorrhages were seen on the posterior surface of the heart, which was slightly dilated in all its chambers; the muscle was somewhat friable. The valves and vessels were normal. The stomach contained some grey medicinal material. A few small petechial haemorrhages were seen in the gastric mucosa. The terminal ileum and colon showed acute inflammation with numerous small haemorrhages in the mucosa. The liver was much reduced in size, weighing only 840 g. It was tawny in colour, with a slightly nodular surface, and had several small areas of haemorrhage. The kidneys were mottled and hyperaemic; the spleen and suprarenals were normal. Microscopically there was gross destruction of liver parenchyma; indeed, it was difficult to identify a healthy liver cell. Fatty degeneration was very marked, and small haemorrhages were collected round the portal vein. The kidneys showed vast cloudy swelling of the tubules, with engorgement of glomeruli and some escape of red cells into the tubules. The contents of the colon revealed large numbers of spores which were morphologically indistinguishable from those of *Amanita phalloides*.

Case IV

On Aug. 18, 1945, a girl aged 6 had tea with an uncle and aunt at Waltham Cross. Her uncle had brought home some "mushrooms" (about 1/2 lb. (225 g.)) which he had picked at Arborfield, near Reading. The aunt cooked the "mushrooms" in a little fat and water for tea, which was eaten by all three. At about 9.30 o'clock the same evening the girl was taken ill with diarrhoea and vomiting, and shortly afterwards the two adults developed the same symptoms. The child and one adult remained very ill throughout the 19th, and on the 20th the child's mother was sent for and took her home. A doctor was called, and he prescribed some medicine. The child's condition was so bad at four o'clock on the morning of the 21st that the doctor was again called, and he arranged for her admission to hospital. She reached hospital at 6.30 a.m. in a collapsed and cyanotic condition, and was given 1/100 gr. (0.65 mg.) of atropine and gastric lavage was performed, but she died half an hour later—rather more than 60 hours after taking the alleged mushrooms.

Necropsy showed the girl to have been well nourished. There was a very marked dusky cyanosis in the hypostatic parts of the body and also in the face and front of the arms. The meninges and brain were intensely congested and purple in colour. There were several small petechial haemorrhages on the back of the heart, the right side of which was acutely dilated and contained a large quantity of extremely dark blood clot. Scattered petechial haemorrhages were found over the surface of the lungs, and also numerous large areas of collapse, which were particularly marked over the back of the right lung and the lower lobe of the left. The lungs throughout were intensely congested. Several small haemorrhages were present in the anterior mediastinum. Numerous petechial haemorrhages were seen throughout the mesentery and omentum; they were mainly concentrated at the junction of the small intestine with the mesentery. The liver weighed 656 g. and showed very advanced fatty changes in which numerous small haemorrhages could be seen; it was, in fact, a typical picture of really acute liver destruction. There was a mild degree of inflammation throughout the intestinal tract—most severe in the transverse colon. The kidneys were intensely congested, otherwise normal macroscopically. Sections of the liver showed an extraordinary degree of fatty degeneration with numerous small haemorrhages throughout the liver tissue. There was marked cloudy swelling of the renal tubules. Spores morphologically identical with those of *Amanita phalloides* were seen in the intestinal contents.

Discussion

In all four cases the main lesion appeared to be a severe toxic action on the liver and kidneys, leading to the rapid appearance of renal and hepatic failure. One striking feature was the constancy of the time factor between the ingestion of the poison, the onset of symptoms, and death. The latent period before the appearance of symptoms of phallin-poisoning was characteristically of 6 to 12 hours' duration. The initial symptom-complex of vomiting, diarrhoea, and collapse was very constant. Gradually the clinical picture became dominated by signs and symptoms of liver and kidney damage. Other authors have described cases with marked jaundice and diarrhoea. Again, cases in which the picture was one of damage to the central nervous system with convulsions and generalized clonic spasms have been described—"forme pseudo-tétanique."

Symptomatic Treatment.—Symptomatic treatment plays a very great part. It is directed towards removing as much of the toxin as possible by stomach washouts in the early stages. Oily purgation, which is said to hinder absorption of the toxin, seems to be a rational measure. Intravenous therapy is necessary to combat the circulatory failure, prevent dehydration, and induce diuresis. No effort should be spared to promote excretion by the kidneys. Alcohol is contraindicated, as it favours the absorption of toxins.

Organic Therapy.—The use of a mixture of fresh mixed stomach and brain of rabbit in the treatment of phallin-poisoning would seem to approach witch-doctoring, but this mixture is still popular in parts of France. The apparent immunity of rabbits to the ingestion of *Amanita phalloides* in the field appears to be the basis of this treatment, yet it seems rather anomalous that the rabbit has been used more than any other animal in experimental work on phallin-poisoning. A mixture of three stomachs and seven brains appears to be the most popular combination. Brain alone does not seem to have the desired effect, or the power of lipoid to absorb the poisons might be the explanation.

Serotherapy.—The chief difficulty associated with serotherapy in the treatment of phallin-poisoning lies in the fact that supplies of serum cannot be continually available in the remote districts where cases are liable to occur; in common with most other diseases, the interval between ingestion and injection is very significant. However, numerous attempts have been made to produce an antiserum, and as long ago as 1897 Calmette increased the resistance of rabbits to the ingestion of *Amanita phalloides* by previously injecting them with an extract of macerated fungus. Dujarric de la Rivière (1933) produced his antiphalloidien serum by inoculating a horse. This serum appears to have had excellent results when given within a reasonable time of onset of symptoms.

Summary

Four cases of *Amanita phalloides* poisoning are reported, with pathological findings.

Amanita phalloides is contrasted with the field mushroom, and its poisons are described.

The main methods of treatment are reviewed.

We wish to thank Mr. Cunard T. Dawson, coroner for the Borough of Ipswich; Mr. H. G. Broadbridge, coroner for the Western Division of Middlesex; and Mr. J. W. Hulme, deputy coroner for the Western Division of London, for permission to publish the cases.

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THE SOLUBILITY OF SULPHONAMIDES IN RELATION TO HYDROGEN-ION CONCENTRATION

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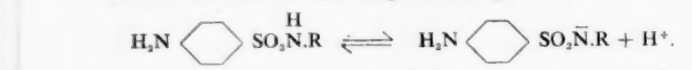
Recent publications on the solubility of sulphonamides in urine (Gilligan and Plummer, 1943; Jensen and Fox, 1943; Medical Research Council War Memorandum No. 10, 1945; Schmidt *et. al.*, 1944; Burn, 1945) show that the problem of the effect of *p*H on solubility has not yet been tackled from a general theoretical point of view. It has been empirically found that the solubility of sulphonamides rises, as a rule, with increasing alkalinity. Fox and Rose (1942) and Jensen and Fox (1943) point out that this effect can be explained by the fact that most sulphonamides are weak acids which form readily soluble salts within the physiological *p*H range of urine. As the salt formation usually increases within the physiological limits of *p*H, the solubility also increases with *p*H. Previous authors, however, offer no quantitative theory for the effect of *p*H on solubility.

It is the object of this paper to show that the problem of the relation between *p*H and the solubility of sulphonamides lends itself to a general treatment in accordance with simple physico-chemical principles. The solubility at a given *p*H can be predicted from two constants: (1) the solubility of the undissociated sulphonamide; (2) the (classical) acid dissociation constant of the sulphonamide. These two constants can be obtained from two (or more) solubility measurements at different H-ion concentrations.

Sulphonamides as Electrolytes

The majority of the sulphonamide drugs are ampholytes (i.e., both acids and bases), though some are bases only—e.g., sulphaguanidine—and other acids only—e.g., sulphasuxidine. The basic properties of simple sulphonamides are associated with the *p*-amino group, the acidic properties with an H atom in the sulphonamide group. Substituents may abolish these functions and add further basic or acidic groups. For physiological considerations most sulphonamides can be treated as monobasic acids dissociating according to



(1)

The basic functions of the molecule, or such second acidic functions as may be present, are as a rule not operative within the physiological range of *p*H.

While the un-ionized forms of sulphonamides are usually sparingly soluble, the ionized sulphonamide salts, formed on addition of alkali, are usually readily soluble. A few examples are given in Table I.

TABLE I.—*Solubility of the Undissociated and Ionized Forms of Sulphonamides*

Sulphonamide	Solubility (37° C.) (mg. in 100 ml.)	
	Acid	Salt
Sulphapyridine	52	About 25,000
Sulphathiazole	96	,, 25,000
Sulphadiazine	15	,, 30,000
Sulphamezathine	190	,, 20,000

The data are taken from the Medical Research Council War Memorandum, "The Medical Use of Sulphonamides"; they are approximate values.

Quantitative Theory of Solubility

We assume that sulphonamides are monobasic acids, and we let HA represent the un-ionized and A^- the ionized form. The relationship between the concentrations of HA and A^- in any solution is governed by the equilibrium

$$HA \rightleftharpoons H^+ + A^-.$$

Applying the law of mass action we obtain

$$K_A = \frac{[H^+]\ [A^-]}{[HA]}, \qquad (2)$$

where [ ] represent concentrations and K_A is the (classical) acid dissociation constant. In a saturated solution the dissolved substance is, in principle, in equilibrium with the solid:

$$HA\ (solid) \rightleftharpoons HA\ (in\ solution) \rightleftharpoons H^+ + A^-.$$

Therefore the total solubility (S) is given by

$$S = [HA] + [A^-], \qquad (3)$$

where [HA] is a constant for a given solvent and a given temperature, and may be represented by

$$S^\circ = [HA]. \qquad (4)$$

Combining (2), (3), and (4),

$$S = S^\circ + \frac{K_A S^\circ}{[H^+]}. \qquad (5)$$

As it is customary to use, instead of K_A and $[H^+]$, the corresponding negative logarithm, *p*K and *p*H, it is convenient to replace $[H^+]$ by 10^{-pH} and K_A by 10^{-pK_A}, where

$$S = S^\circ\ (1 + 10^{pH-pK_A}). \qquad (6)$$

With the help of (5) or (6) the total solubility of a sulphonamide at different H-ion concentrations can be calculated if S° the solubility of the un-ionized form and K_A are known.

Determination of S° and K_A

When the compound shows only acidic properties S° can be determined by measuring the solubility at a *p*H at least 3 units below pK_A. When the compound is an ampholyte this may not be possible because the solubility rises again below the iso-electric point. The solubility should then be measured at a *p*H near the iso-electric point on the alkaline side, and a correction should be applied in accordance with (8). As a rule S° is not very different from S in water, since in the absence of other buffers the sulphonamide itself causes the water to assume a *p*H near the iso-electric point.

In theory K_A can be determined by the usual methods for the measurement of dissociation constants (Bell and Roblin, 1942). In practice the application of these methods to sulphonamides is somewhat inconvenient because of the low solubility of these compounds. A more convenient method giving both K_A and S° consists, in principle, of making two measurements of the total solubility, S′ and S″ at $[H^+]'$ and $[H^+]''$. Using a rearranged version of (5), we may write

$$S^\circ = \frac{S'}{1 + \frac{K_A}{[H^+]'}} = \frac{S''}{1 + \frac{K_A}{[H^+]''}}.$$

Therefore

$$K_A = \frac{S'' - S'}{\frac{S'}{[H^+]''} - \frac{S''}{[H^+]'}}. \qquad (7)$$

When K_A has been calculated, S° can be obtained with the help of the following version of (6):

$$S^\circ = \frac{S}{1 + 10^{pH - pK_A}}. \qquad (8)$$

Equations (7) and (8) enable us to calculate S° and K_A from two solubility measurements at two different H-ion concentrations. For the sake of accuracy more than two sets of data are desirable, and with a series of data it is more convenient to find S° and K_A graphically instead of using (7) and (8). According to (5), a plot of S against $\frac{1}{[H^+]}$ gives a straight line intersecting the S axis at S″ with a slope a $(S^\circ K_A)$, whence K_A can also be found. Alternatively, rearranging (5), we obtain

$$\log\left(\frac{S}{S^\circ} - 1\right) = pH - pK_A$$

so that a plot of $\log\left(\frac{S}{S^\circ} - 1\right)$ against *p*H gives a straight line of unit slope intersecting the *p*H axis at pK_A.

Test of the Theory

Data published by Gilligan and Plummer (1943) for the solubility of sulphadiazine in buffer solutions of different *p*H can be used to test the theory. In accordance with the theory straight lines were obtained when the graphical methods were applied. S° was found to be 12 mg. per 100 ml. and pK_A to be 6.33. Table II shows that the observed and calculated solubilities are in satisfactory agreement. The theory is also confirmed by our own series of measurements, which have been published elsewhere, together with a more rigorous treatment of the theory (Krebs and Speakman, 1945).

TABLE II.—*Solubility of Sulphadiazine in Buffer Solutions at 37° C.**

*p*H	S Observed	S Calculated
5·25	13	13
5·50	14	14
5·70	15	15
6·12	19	19
6·38	26	26
6·90	53	57
7·20	102	101
7·30	136	124
7·85	383	393

* Measurements of solubility taken from a graph in the paper of Gilligan and Plummer (1943). Calculations based on assumption that $S^\circ = 12$ mg./100 ml.; $pK_{A\ 37^\circ} = 6{\cdot}33$. S is expressed in mg. sulphadiazine in 100 ml.

K_A and S° of Sulphonamides and their N^4-acetyl Derivatives

Knowledge of K_A and S° of the sulphonamides and their acetyl derivatives will thus enable us to predict approximately

the solubility of the drugs in body fluids whose *p*H is known. We have therefore measured the necessary constants for the more common sulphonamides and their N^4-acetyl derivatives. The measurements were made in buffer solutions of a total ionic strength of 0.1 M. When the theory is applied to urine it has to be borne in mind that pK_A will be slightly affected by other solutes which contribute to the ionic strength; pK_A will therefore show slight variations from urine to urine, which may, however, be neglected for practical purposes. The solubility will also be affected by substances in the urine which combine with sulphonamides. Among these urea is probably the most important one. The solubility of sulphamerazine in serum was found to be almost the same as in buffer solutions, which indicates that serum proteins have no appreciable effect on the solubility. This is somewhat unexpected in view of the alleged "binding" of sulphamerazine by serum protein.

The results of the measurements of K_A and S° are shown in Table III. The data for pK_A are not very different from those reported by Bell and Roblin (1942) for 25°, while the data for S° roughly agree with the solubilities in water reported in the literature. It will be noted that the pK_A of the N^4-acetyl compounds is in every case smaller than the pK_A of the "free" sulphonamides; in other words, the acetyl derivatives are stronger acids than the parent substances.

TABLE III.—*Acid Dissociation Constants (pK_A) of Sulphonamides, and their N^4-acetyl Derivatives, and Solubilities of Undissociated Compounds. (S° at 38°.) (pK_A refers to the Classical Dissociation Constant; Ionic Strength = 0.1 M.)*

Drug	pK_A	S° (mg. in 100 ml.)
Sulphadiazine	6·28	9·9
N^4-acetyl sulphadiazine	5·86	18·6
Sulphathiazole	7·10	92
N^4-acetyl sulphathiazole	6·81	7·1
Sulphamezathine	7·38	64
N^4-acetyl sulphamezathine	7·14	84
Sulphamerazine	6·95	41
N^4-acetyl sulphamerazine	6·55	80
Sulphapyridine	8·32	50
N^4-acetyl sulphapyridine	8·02	31
Sulphasuxidine	4·48*	49

* Refers to the dissociation of the carboxyl group of the succinyl radical.

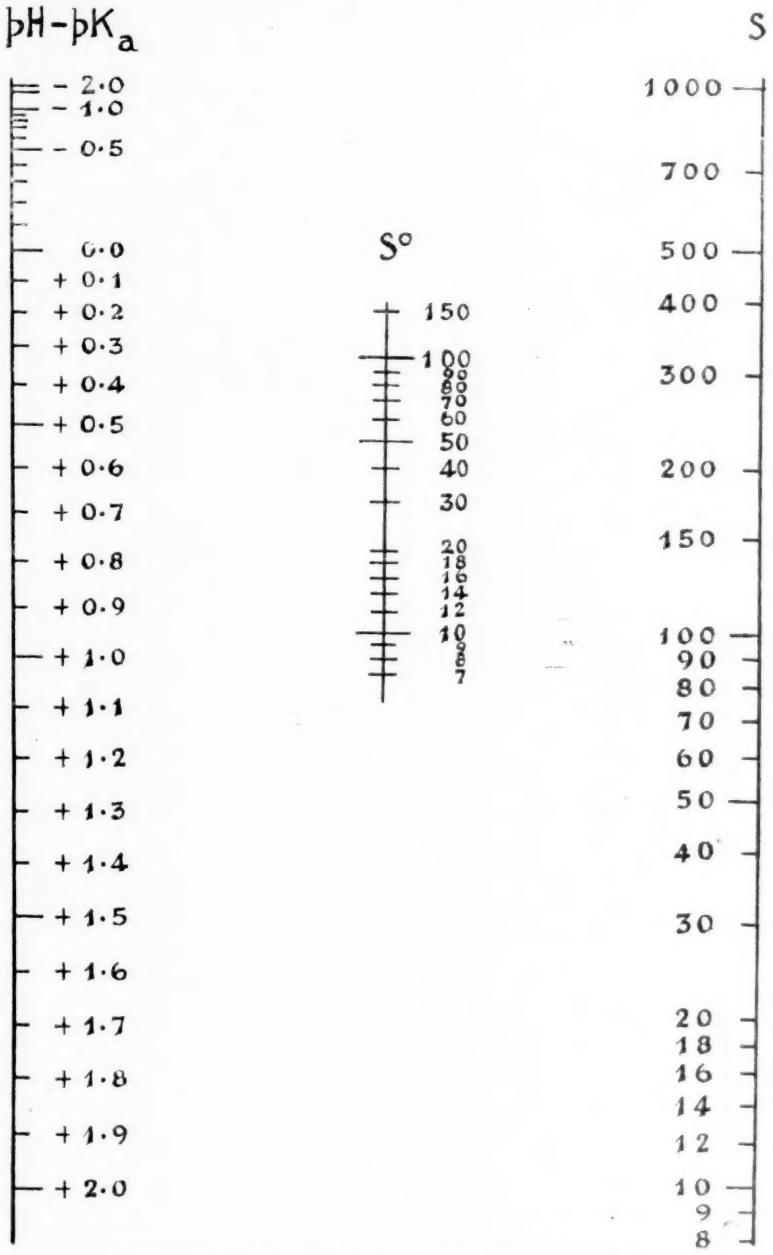
From the data given in Table III it is possible, with the help of (5) and (6), to calculate the solubilities within the physiologically relevant range of *p*H. Table IV gives the calculated solubilities at *p*H 7.4—the approximate *p*H of blood plasma and of the contents of the small intestine—and at *p*H 6.4—a degree of acidity often found in urine.

TABLE IV.—*Solubilities of Sulphonamides (calculated)*

Drug	*p*H 7·4	*p*H 6·4
Sulphadiazine	140	23
N^4-acetyl sulphadiazine	664	83
Sulphathiazole	276	138
N^4-acetyl sulphathiazole	35	9·9
Sulphamezathine	131	74
N^4-acetyl sulphamezathine	237	99
Sulphamerazine	157	53
N^4-acetyl sulphamerazine	646	137
Sulphapyridine	56	51
N^4-acetyl sulphapyridine	39	32

Nomogram

In order to facilitate the calculation of S (though with some loss of accuracy) a universal chart has been constructed covering the more important range of the common sulphonamides. Any straight line drawn across the diagram intersects the three scales at values of ($pH - pK_A$), S°, and S which satisfy equation (6). Hence, when ($pH - pK_A$ and S° are known, the nomogram here reproduced may be used for calculating S with an accuracy sufficient for most purposes. For example, find the solubility of sulphadiazine at *p*H 7.0 (38°). In this case $pH - pK = 7.00 - 6.28 = +0.72$, and S° = 9.9. A straight line from the point +0.72 on the $pH - pK_A$ scale to the point 9.9 on the S° scale, when produced, intersects the S scale at 62. This is the solubility at *p*H 7.0. It is convenient to use a stretched thread for the geometrical operation.



Nomogram for the rapid evaluation of the solubilities of sulphonamides.

General Validity of the Theory

The theory of solubility of sulphonamides proposed in this paper is applicable to other substances. Of pharmacological interest is the application to drugs which (1) are weak acids or bases with a pK_A or pK_B between 6 and 8, (2) are sparingly soluble in their undissociated form but readily soluble in their dissociated form. Among the acids a number of barbiturates, among the bases quinine and other alkaloids, belong to this category.

Dissociation Constant and Physiological Properties

Bell and Roblin (1942) and Schmelkes *et al.* (1942) have pointed out that the dissociation constant of N^1-substituted sulphonamides is one of the factors controlling the bacteriostatic properties. Bell and Roblin produce evidence in support

of the hypothesis that the more negative the SO_2 group of a sulphonamide, the greater the bacteriostatic activity. As the SO_2 group of a given sulphonamide is more negative in the ionized form than in the un-ionized form, the dissociation constant must influence the bacteriostatic activity.

The dissociation constants are liable to affect a variety of other pharmacological properties of the drugs, especially their distribution in the body (Shannon, 1943). Some observations on the absorption from the intestine can be explained if it is assumed that absorption is facilitated by the ionization of the sulphonamide group. Sulphapyridine has been reported to be absorbed more slowly, less regularly, and less completely than sulphathiazole and sulphadiazine (see Hawking, 1945). At the *p*H prevailing in the small intestine sulphapyridine is largely un-ionized, while sulphathiazole and sulphadiazine are mainly present as anions. Particularly striking is the non-absorption of the drugs of the sulphaguanidine and sulphasuxidine groups. Marshall *et al.* (1940) found empirically that sulphaguanidine (as well as N^1-(2-hydroxyethyl)-sulphapyridine and N^1-diglycol-sulphapyridine) are poorly absorbed. In these compounds both H atoms of the $-SO_2NH_2$ group are substituted and the acidic properties of this group are therefore abolished. In sulphasuxidine, sulphathalidine, and sulphanilyl sulphanilate the acid properties of the SO_2 group are so weakened by the introduction of another acidic radical into the molecule that they do not come into play under physiological conditions. It is thus very suggestive to think that the non-absorption of sulphaguanidine, sulphasuxidine, and allied compounds is related to the non-ionization of the $-SO_2N<$ group.

The penetration of sulphonamides into the cerebrospinal fluid and their distribution between blood plasma and blood cells are further aspects deserving of examination from the same point of view. More experimental data are required, however, before the problem can be usefully discussed.

Summary

It is shown that the approximate solubility of sulphonamides in aqueous solutions of different *p*H can be predicted from two constants—the solubility of the undissociated sulphonamide and the acid dissociation constant. Agreement between observed and predicted values is satisfactory.

A method for the determination of the two constants is described and the values of the constants are given for the more commonly used sulphonamides and their N^4-acetyl derivatives.

It is pointed out that the acid dissociation constants of sulphonamides affect certain pharmacological properties. The non-absorption of the drugs of the sulphaguanidine and sulphasuxidine groups appears to be related to the non-ionization of the $-SO_2N<$ group.

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The Public Health Committee of the Edinburgh Town Council, as reported in the *Scotsman*, has had before it details of two new medical schemes. One is for the provision of orthopaedic services. A joint committee of local authorities and voluntary organizations recommended the appointment of a director of orthopaedics for the area who shall also be a reader in orthopaedics in the University of Edinburgh. The Public Health Committee approved the proposals and empowered the joint committee to appoint a suitable applicant in collaboration with the University Court. The other scheme, proposed by the University in conjunction with Edinburgh Corporation, is that one of the chairs of medicine in the University should be devoted to teaching, care of patients, and clinical research solely in connexion with the municipal general hospitals. To put this proposal into effect building developments would be essential at the Western General Hospital. The Public Health Committee, agreeing in principle to the proposals outlined, resolved that the arrangements should be examined in greater detail with a view to making the necessary adjustments between the Corporation and the University.

PENICILLIN CREAM OF LOW CONCENTRATION

BY

G. H. du BOULAY, M.B.

This analysis of 39 cases of staphylococcal and streptococcal infection of the skin, treated with a penicillin cream containing 200 units of penicillin per ml., was carried out at Charing Cross Hospital. The application used was made up as follows:

Lanette wax	3.5 g.
Liquid paraffin	15 ml.
Penicillin solution	5 ml
Phenoxetol	2 ml.
Aqua redest.	ad 100 ml.

and was spread over the infected skin twice a day after the area had been thoroughly washed with warm water and soap.

In order that the clinical observations should not be influenced by the bacteriological findings, the diagnosis was made and the treatment prescribed on clinical grounds alone; and although the culture was taken at the time of the patient's first visit, the report was not seen until he had been under treatment for a fortnight. Later it was discovered that this routine was no disadvantage to the occasional patient harbouring penicillin-resistant organisms, but the reverse, because some improvement was gained in every case during the first week.

The cases recorded are: impetigo, 20; sycosis barbae, 5; infection superimposed on previous disease or trauma, 10; otitis externa, 2; retro-aural intertrigo, 2.

Impetigo

1. *Penicillin-resistant Strains of Staph. aureus.*—Out of the 20 cases of impetigo two were found on culture to yield resistant strains of *Staph. aureus.* Both of these cases, reacting in the same way to treatment with the penicillin cream, showed a marked improvement after one week, but relapsed at the end of two weeks, and remained stationary until they were subsequently cured by other methods.

2. *Sensitive Strains.*—Although the *Staph. aureus* and the haemolytic streptococci isolated from 11 of the cases were proved to be penicillin-sensitive, it was found in many of the cases that the penicillin-resistant *Staph. albus* could also be grown from the swab without any apparent effect on the course of the cure. All these 11 were clear in from three days to two weeks, the only remaining evidence of past disease being a slight erythema. It was noticed that none of these cases had a history of more than five weeks.

Two more cases which had been suffering from severe impetigo for 7 and for 40 weeks respectively cleared almost completely, but relapsed in six weeks and eleven weeks. The first subsequently recovered on penicillin, but the second had a residual blepharitis. One case had a secondary infection with *Ps. pyocyanea*, and cleared in two and a half weeks (phenoxetol being highly active against this organism). One case did not return for observation.

In view of the possibility that the length of the history alters the speed and the ease of cure by penicillin, two cases with histories of less than five weeks' duration were given penicillin cream in the usual way for 10 days and 14 days respectively, and then, on the point of complete cure, when they might very well have been discharged, the treatment was stopped. Both immediately relapsed. (They were cleared subsequently, the penicillin being again applied after a lapse of three days. Their cure from the first inception of the treatment took four and six weeks.)

To pursue the investigation further it was planned to make a graph of "depth of organismal invasion of the skin" against "length of cure," and, further, to attempt to correlate these findings with the length of history and the penetrating power of the cream used. Before the experiments could be properly begun one of our helpers was unfortunately taken ill; but our results seemed to indicate that this treatment did not furnish an effective concentration of penicillin in the dermis. Two to three hours elapse before all of this cream has soaked into the skin if the layer applied is 1/16 in. (0.16 cm.) thick, by which time it is thought that the penicillin has lost much of its effectiveness. Sensitive staphylococci in the dermis were certainly unharmed.

Sycosis Barbae

Five patients with sycosis barbae were treated by this method. They had suffered from the disease for periods of five years, two years, two years, a few weeks, and ten days respectively. All yielded cultures of penicillin-sensitive staphylococci and streptococci, and all improved very greatly after two weeks' treatment. Over a number of months the improvement was found to fluctuate and reach a stage in which a few pustular follicles persisted in appearing. In spite of this the patients found the treatment more satisfactory than any they had had before: by the daily use of the cream after shaving they were able to keep the sycosis very well in check.

Superimposed Infection

This term is used to cover all cases of pyogenic infection following other disease or trauma. Ten such cases have been investigated. They occurred after (1) tinea pedis; (2) chronic eczema (2 cases) (E.A.H.-F. syndrome); (3) varicose eczema (2 cases); (4) self-inflicted excoriations (2 cases); (5) a diathermy burn; (6) traumatic ulcers on the fingers; and (7) unknown superficial trauma.

(1) This case frequently relapsed, developed a lymphadenitis followed by bacteriaemia, which responded to intramuscular penicillin, and eventually recovered from the dermatitis after seven weeks, the tinea remaining as before.

(2) Both patients were clear of the infection in two weeks, and neither complained of any increased irritation from the use of the preparation.

(3) Both cases were healed in three weeks.

(4) One of these excoriations had been present for six years, except for a brief period: the other was a more generalized and recent crop of spots. With adequate watching and restraint they were healed in four and in two weeks.

(5) This was a burn which had been treated with sulphathiazole ointment and subsequently flavine. The sensitization rash was followed by a large patch of skin infection around the burn. After two weeks the skin was clear and the burn had healed; the rash subsided without further incident.

(6, 7) These patients were clear of infection in a week.

From all these cases penicillin-sensitive *Staph. aureus* was isolated; apart from this fact they are not comparable, but serve to illustrate the effectiveness of a low-concentration penicillin cream in the treatment of fairly superficial infection.

Otitis Externa and Retro-aural Intertrigo

From all four of these very chronic cases we had excellent results. The shortest history was 10 years, the longest 25; but, notwithstanding the consequent fibrosis and the presence of *B. coli* in one ear as a secondary invader, infection disappeared in each case within six weeks, and the cracks were then healed, slowly, with the help of silver nitrate. No untoward reactions were observed in this, admittedly small, series of cases. The application of the cream was usually followed by a stinging sensation, but it soon passed off and no visible effects were left.

Conclusions

It is wise to treat all cases without waiting for bacteriological findings (perhaps the phenoxetol, and certainly the washing, help).

When impetigo is caused by a penicillin-sensitive organism, and has not been present for more than five weeks, it will heal in from three days to two weeks—usually nearer a week.

To avoid recurrences treatment should be continued in all cases, regardless of the length of the history, until no mark remains on the skin.

In chronic cases, in sycosis barbae, and in those few caused by resistant strains, this cream may fail to clear up the disease.

No evidence of a sensitive strain becoming resistant during treatment was found.

Finally, in view of what I believe to be a general lack of faith on the part of civilian doctors in penicillin cream of low concentration, I would emphasize the effectiveness of this very low concentration cream.

I wish to thank Dr. J. E. M. Wigley, head of the Skin Department, Charing Cross Hospital, for the original and many other valuable suggestions, as well as for permission to carry out this work; and to express my appreciation of the service of the pathological laboratory and also of the nursing staff in the Skin Department.

Medical Memoranda

Intestinal Hernia between Folds of Broad Ligament

The following case may be of sufficient rarity to be put on record.

CASE HISTORY

Miss A., an A.T.S. private, was admitted to Old Windsor Emergency Hospital from a camp reception station on July 11, 1943, with the following history. Twenty-four hours previously she had developed acute abdominal pain of a colicky type, and had had three bouts of vomiting. She also complained of frequency of micturition and headache. The temperature was 100.8°, pulse 98, respirations 20. The tongue was furred. The abdomen was tender and rigid, especially to the right of the umbilicus. The urine was free from acid and albumin. A soap enema had been given, but had yielded a very scanty result.

On admission to hospital the temperature was 100°, pulse 98, respirations 25. There were low abdominal tenderness and rigidity, and a right-sided paramedian scar resulting from removal of the appendix, with drainage, eighteen months previously. On vaginal examination she was tender over the right and posterior fornices, especially on palpation of an elastic mass which appeared to lie in the pouch of Douglas. This mass was also felt on rectal examination. Menstruation was normally at monthly intervals, but the last period had occurred only a week after the previous one had finished. Risk of pregnancy was admitted. During the 48 hours after admission the bowels were opened twice—once spontaneously—both motions being small in amount.

In view of the history and findings, a tentative diagnosis of ectopic pregnancy was made, and laparotomy was performed through the original incision. A little free fluid was present in the peritoneal cavity, and the inferior part of the right broad ligament was distended by what proved on investigation to be rather more than a foot of ileum which had passed through a ragged hole in the posterior fold. The hernia was reduced without much difficulty, and the bowel, though very congested, was viable. The rent in the broad ligament was repaired with catgut, and the abdomen closed without drainage. Recovery was uneventful.

It appears that the perforation in the broad ligament may have resulted from the use of a drain after the appendix operation, but the exact time when the hernia occurred is problematical.

My thanks are due to Col. Owen-Prichard, superintendent of Old Windsor Emergency Hospital, for permission to publish this case.

F. H. FINLAISON, F.R.C.S., M.R.C.O.G.,
Surgeon, E.M.S.

A Case of Penicillin Dermatitis

It is not yet known whether the minor toxic reactions (urticaria, unpleasant taste, headaches, etc.) occasionally occurring after the clinical administration of penicillin are due to the penicillin or to its impurities. Dermatitis following the application of penicillin creams has been thought to be due to the vehicle (lanette wax, etc.). A case of extensive and severe dermatitis after penicillin administration was recently reported in a British officer (Michie and Bailie, 1945). The case described below demonstrates that penicillin itself and not its impurities can be indicted as a cause.

CASE HISTORY

A Royal Air Force medical officer, aged 31, was experimentally treated with penicillin pastilles (300 units per lozenge) and a throat spray (250 units per c.cm.) for a febrile nasopharyngitis and tracheitis. Both spray and lozenges were administered hourly, during the waking hours, for two days, after which all signs and symptoms had subsided.

One week later, T.A.B.C. vaccine, which contains 25% of alcohol, was accidentally splashed into both eyes, the acute resulting symptoms being rapidly relieved by copious normal saline irrigation. Fourteen days later there were still signs and symptoms of a mild conjunctivitis, and treatment consisting of zinc sulphate 0.25% drops was instituted after seeking the advice of an ophthalmologist. No improvement occurring after four days, the treatment was changed to penicillin eye-drops (250 units per c.cm.) hourly. Considerable improvement took place within 24 hours, when the patient began to complain of intense itching of the skin over the inferior orbital margins. The next day, penicillin drops having now been instilled for 48 hours, the conjunctivitis had largely subsided, but the intense irritation continued and a vesico-papular rash was noticed. The rash was present over the inferior orbital margins, in a "butterfly" distribution, where the surplus eye-drops had been wiped away by the patient. All treatment was immediately discontinued. The penicillin solution was found to be still active (more than 200 units per c.cm.), and was left at room temperature for subsequent experiment.

The rash subsided without treatment in eight days. It progressed to vesiculation, the vesicles being pin-point in size on a papulo-erythematous base. A fine desquamation occurred, the skin finally returning to normal in 14 days. There was no previous history of dermatitis, other rashes, or exposure to the sun. A dermatologist

agreed that the rash may have been a contact dermatitis due to the penicillin solution.

To determine the aetiology of the rash the patient was patch-tested with the original penicillin solution (now found to be completely inactive), a freshly prepared solution of penicillin, and the 0.25% zinc sulphate solution, on the flexor surface of the forearm. This test proved negative. After the rash had completely subsided the patch tests were repeated on the site of the lesions—i.e., immediately below both eyes. In 24 hours the active penicillin solution produced a patch of itching vesico-papular lesions on an erythematous base exactly similar to the original rash; the inactive solution and the zinc sulphate patches were negative.

COMMENT

The inactive penicillin solution can have contained only manufacturing impurities and the breakdown products of penicillin. The fresh solution which produced the positive patch differed only in that penicillin was present. It can legitimately be concluded, therefore, that the aetiological agent in the production of the dermatitis was penicillin and not its impurities. It is probable that sensitivity had been induced in the patient by the course of penicillin 25 days previously. A curious feature is that the conjunctivitis was not aggravated by the dermatitis-producing agent. Winthrop's penicillin, supplied in 100,000-unit ampoules, was used throughout.

The haphazard use of penicillin-containing face powders and toilet applications envisaged in the popular press would appear to be not devoid of risk.

P. D. BEDFORD, M.B., Ch.B.,
Flight. Lieut., R.A.F.V.R.

REFERENCE

Michie, W., and Bailie, H. W. C. (1945). *British Medical Journal*, 1, 554.

Dermatitis due to Sulphaguanidine

The patient is a private in the R.A.M.C., a member of the hospital staff, aged 41. Before dealing with his present condition it is relevant to consider past events.

He was admitted to hospital on April 11, 1945, suffering from dermatitis of uncertain origin but probably solar, affecting the lower part of the left leg, which ulcerated, this being to some extent due to varicose veins, from which he suffers. Sulphanilamide powder was applied to the ulcer for three successive days, but in view of the lack of response this was stopped and the ulcer eventually healed with simple lotions. There was no generalized eruption at that time. On May 23 the ulcer broke down again, and he was admitted to hospital. He was treated by local saline dressings and parenteral sulphathiazole, of which he received in all 12 g. in three days. On the second day he complained of itching, and on the third day a typical papular eruption was observed on the legs and trunk. The ulcer subsequently healed, and has remained healed.

On July 31, 1945, he was again admitted to hospital, this time suffering from bacillary dysentery. In view of the past history I was chary of giving sulphaguanidine, but as a test I gave him 0.5 g. of the drug in the afternoon of July 31. There was no sign of eruption on the next day and I therefore started him on the normal course of sulphaguanidine—7 g. immediately and 3.5 g. four-hourly. He received 17.5 g. on Aug. 1, and 21 g. on the following day. Towards the end of the second day he noticed a slight erythema of the left leg, and the next morning he presented an almost identical picture to that of the previous sulphathiazole dermatitis. There was a papular eruption covering the anterior and posterior aspects of the trunk, especially the chest, and a similar eruption on the legs, more severe on the left. A serous discharge later exuded from the rash on this leg. The eruption on the back showed a straight line of demarcation from normal skin corresponding to the boundary line of the sunburned area, the untanned area below the belt being free from rash. Similarly the thighs showed few papules, while the legs were severely affected on flexor and extensor surfaces. The face and hands were unaffected, and the arms showed only a small eruption in the flexures of the elbows. The axillae were free. Apart from the serous discharge from the lesion on the left leg, the remainder of the eruption followed a normal course to recovery, using simple lotions. No other drugs were being taken by the patient at the time, nor was there any history of dermatitis following administration of any other drug.

The connexion between the origin and distribution of the dermatitis and the action of sunlight is interesting. Patch tests with sulphanilamide and sulphaguanidine on non-sunburned areas were negative.

BASIL HAIGH, M.B.,
Capt., R.A.M.C.; M.O. i/c British Wing.
Military Hospital, Nira.

Five organizations concerned with chiropody and all recognized by the Board of Registration of Medical Auxiliaries—British Association of Chiropodists, Chelsea Chiropodists' Association, Chiropody Practitioners (N.I.Ch.) Ltd., Incorporated Society of Chiropodists, and Northern Chiropodists' Association—have amalgamated to form the Society of Chiropodists Limited. The new organization will also take over the functions of the Chiropody Group Council in relation to the Board of Registration of Medical Auxiliaries, on which body it is directly represented.

Reviews

ALLERGY

Essentials of Allergy. By Leo H. Criep, M.D. With foreword by Robert A. Cooke, M.D. (Pp. 381 43 illustrations. $5.00 or 30s.) Philadelphia and London: J. B. Lippincott Company.

This book is one of a series designed to provide concise and effective working manuals for the busy practising physician. It is prefaced by the chairman of the Committee on Education of the American Academy of Allergy, and the author is, among other things, consultant in allergy to the medical service of the U.S. Veterans Administration. The hopes raised by these auspices are not disappointed, for Dr. Criep has written a compact, well-balanced, and useful account of allergy as it concerns the clinician. In driving a way through the thicket of data and terms which has grown up around anaphylaxis and allergy Criep has used a bulldozer technique, and it is certain that other pathologists and allergists will not agree with all his definitions and interpretations. Nevertheless, the student will find an extremely clear presentation of the meaning of such words and ideas as atopy, idiosyncrasy, intolerance, and anergy. If he is an intelligent student he will also realize that there are many gaps in our understanding of the allergic diseases. As R. A. Cooke writes in the preface, relatively little is known of the fundamentals of the allergic reactions or the nature of the protective response to present-day methods of immunological treatment, which rests largely on empiricism. It is, perhaps, the only defect of Criep's book that it gives no explanation of the mechanism of the pollen treatment of hay-fever or the desensitization to liver extract of a patient under treatment for pernicious anaemia. After discussing the fundamental aspects and morbid physiology of allergy Dr. Criep gives a general account of diagnosis and treatment, and then proceeds to describe the individual manifestations of allergy—hay-fever, bronchial asthma, nasal allergy, skin allergy, serum allergy, bacterial allergy, fungus allergy, physical allergy, and a miscellaneous group. Each chapter has a helpful summary, and there are short case-histories followed by lists of teaching points. The book is indeed a most successful teaching manual. Looking at it from a broader scientific aspect, however, the general physician or pathologist may wonder whether the specialist in allergy is perhaps not too preoccupied with the handling of the familial allergies or atopy, as he calls them. These are characterized by two features. The first is an abnormal tendency to produce *reagins*—that is, to become sensitive—to common substances in the environment. The second is the possession of a shock organ, usually the respiratory tract or the skin. The detection of the substances which may provoke asthma or rhinorrhoea in susceptible people has perhaps precluded us from thinking hard enough about the acquired or intrinsic asthmas and about the reason for the localization of symptoms. The identification and listing of allergens must obviously continue, and we are only just realizing the allergic potentialities of sulphonamides, thiouracil, penicillin, and a host of other non-protein compounds used in medicine and industry. However, just because the number and variety of allergens are almost unlimited it will be profitable now to think a little harder about what makes a shock organ such, and why the reaction is sometimes so exquisitely particularized, as in the response of the platelets in the drug purpuras. There are, indeed, few fields of clinical science in which a greater harvest of useful knowledge waits to be gathered than in the allergic diseases.

BLUE-PRINT FOR THE NATION

Post-War Britain. Edited by Sir James Marchant, K.B.E., LL.D. (Pp. 255. 12s. 6d. net.) London: Eyre and Spottiswoode.

Sir James Marchant has assembled eleven leading authorities, each of whom discusses the phase of post-war reconstruction in which he is an expert. Lord Horder writes about the future health of the nation. It is difficult to avoid platitudes in writing about health, but Lord Horder's style is always refreshing and he salts his essay with epigrams. Thus he suggests that one way of attaining health is to be "really convinced that it is better being well than ill"—a precept which needs to be placed in front of a good many people. He also touches on the contribution to health which is to be made by the State. Evidently

his essay was written not only before the recent change of Government but before the Willink negotiations. He says that the White Paper is to be welcomed as a compromise between the present unsatisfactory maze of our health services and a whole-time State service for all doctors, though the White Paper requires certain adjustments to make it more acceptable. Of these adjustments he names three: freedom of private practice, continuation of contributory schemes, and a fuller and more direct representation of the profession on controlling bodies. Sir John Orr writes on the food of the future, and describes the Hot Springs Conference of May, 1943, as the starting-point of a new age in which science will be applied directly with all its powers to supplying the things man needs. Once get that direct application of science started, and the road to the age of plenty, while it may be a long one, will be undeviating. Sir Ernest Simon writes with equal authority on his own subject of housing, and goes into much useful detail as to costs and subsidies, rents and rates. Other experts write on agriculture, plastics, coal, iron and steel, and electrification. It is rather a relief to find no mention of atomic energy in a volume on the lay-out of to-morrow. But if this work, as its cover proclaims, is "a blue-print for our national life" it leaves out as many essentials as it includes. There is no section on town and country planning, or civil engineering, or local government and services, nothing about education or recreation, or the culture of mind and spirit. It presents, so far as it goes, a very competent and orderly landscape, but rather a truncated one, and not much sky.

SURGICAL TREATMENT OF PEPTIC ULCER

Duodenal and Jejunal Peptic Ulcer: Technic of Resection. By Rudolf Nissen, M.D. (Pp. 143; illustrated. 21s.) London: William Heinemann. 1945.

The results of partial gastrectomy in the treatment of peptic ulceration are usually acknowledged to be more satisfactory than those of other surgical methods of treatment, except perhaps in a very restricted number of cases. The main objection to this operation is the mortality associated with its performance, which, although now considerably reduced, still remains well above that of simpler procedures. Analysis shows that this mortality is mainly due to two complications, collapse and infection of the lungs being the chief hazard, with leakage from the duodenal stump coming second.

Reliable closure of the duodenum must therefore be considered one of the most important technical details of the operation. A new book, *Duodenal and Jejunal Peptic Ulcer*, by R. Nissen of Brooklyn, despite its rather deceptive title, is devoted largely to the practical means by which this may be achieved. We must confess that we wondered whether such a small, if important, detail warranted the production of a whole book on the subject, for a properly trained surgeon should be competent to devise means of dealing adequately with difficult circumstances as they arise on the operating table; but the author, anticipating this criticism, justifies his contribution by the statement: "In about 50% of all cases in which surgical intervention for ulcer is indicated, the procedures herein described are applicable." There is a good discussion of the pros and cons of the prepyloric division of the stomach, which reveals the author strongly in favour of section of the duodenum beyond the ulcer, although the floor of the ulcer may remain if it has penetrated through into the surroundings and especially the pancreas. This is the general conclusion reached by gastrectomists in this country. In brief, the author's method of dealing with a difficult duodenal stump is to leave sufficient anterior wall (the ulcer being usually posterior) to turn over and unite with the freed posterior wall immediately beyond the floor of the ulcer, afterwards burying this within the capsule of the pancreas. It is a method often used *secundum artem* by surgeons well versed in the technique of gastric resection. For exceptional cases where the anterior wall is deficient other procedures, such as a duodeno-jejunal anastomosis, are advocated.

The second half of the book deals with anastomotic ulcers and gastro-jejuno-colic fistula. In the later condition the author, correctly as we believe, describes Lahey's two-stage resection of colon, stomach, jejunum, and duodenum, with ileo-colostomy, as being unnecessarily severe and physiologically undesirable.

The book is admirably illustrated and well produced; it has a foreword by Owen Wangensteen.

Notes on Books

Ophthalmia Neonatorum: The Problem after Thirty Years of Statutory Notification and Sixty Years of Credé Prophylaxis, by ARNOLD SORSBY, M.D., F.R.C.S., is published by Hamish Hamilton Medical Books at 7s. 6d. This is the first monograph from the Institute of Ophthalmology. It consists of a very useful collection of work which has mostly been published already, together with conclusions drawn therefrom. It will form a useful reference book for those who are seeking statistical data, since 31 of the 66 pages are occupied by tables or graphs. There are a foreword by Sir Allen Daley and an exhaustive bibliography. It is surprising that no reference is made to the late M. S. Mayou (except in the bibliography), to whom is due the original organization of White Oak Hospital, Swanley, and St. Margaret's Hospital, Kentish Town, and whose work in that connexion was recognized by all ophthalmologists.

Internal Medicine, edited by JOHN H. MUSSER (Henry Kimpton; 50s.) is obviously popular in the United States, as is shown by the appearance of a fourth edition. In size and scope it lies about half-way between "Conybeare" and "Price," though, like most textbooks of medicine, it is showing a tendency to giantism: the third edition was 140 pages longer than the second, and the fourth is 200 pages longer than the third. As the students' brain capacity has not increased, and as it is undesirable to lengthen the clinical course, it looks as if the time has come when a new approach should be made to the problem of writing textbooks for students, probably on the lines of general pathology and special pathology. Wartime advances in medicine have been included, though it is too early for them to have been properly assimilated. Thus quinine is preferred to atebrin in the prophylaxis of malaria, and penicillin is not mentioned in the treatment of agranulocytosis.

The Information Division of the European Regional Office of U.N.R.R.A. issues a periodical *Review of the Month* from 11, Portland place, London, W.1. The latest number (for October-November, 1945) records the second anniversary of the foundation of U.N.R.R.A. and gives news of the work of the missions in various European countries.

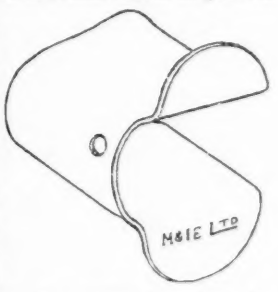
Preparations and Appliances

A SIMPLE "PROPWAY" FOR USE IN GENERAL ANAESTHESIA

Dr. BARNET SOLOMONS (London, N.W.8) writes:

Every anaesthetist has faced the problem of the closed mouth in light anaesthesia. All degrees, from gentle closure to extreme masseteric spasm, have presented themselves from time to time.

This simple divided propway has been found useful in general anaesthesia of all types. It is inserted before induction, is quite comfortable, and never causes gagging or unpleasantness to the patient. It gives ample access and allows easy control of the tongue by the forefinger, spatula, or closed tongue forceps used as a hooked spatula. The blade of a laryngoscope can be inserted in light anaesthesia without the necessity for further opening the mouth. If an oral endotracheal tube is passed this can be slipped through the slot and if necessary tied to the propway, thus protecting the tube from the patient's bite. A flat-type pharyngeal metal or rubber airway can be inserted and supported similarly. Finally, the propway can be used with the open side towards either angle of the mouth.



I am indebted to Private T. Smith, R.A.M.C., for his help in the design of this device. It is obtainable from Medical and Industrial Equipment Ltd., 12, New Cavendish Street, W.1.

HORMONE PRODUCTS

The Organon Laboratories Ltd. offer for sale "cortrophin," a preparation of the anterior pituitary hormone which promotes growth of the cortical cells of the suprarenal gland. It is recommended for use in Simmonds's disease (pituitary cachexia), anorexia nervosa, and for the asthenia and hypotension of convalescence. They also offer "neo-hombreol (M)," which is methyl testosterone; this is recommended for various purposes: (*a*) to protect the weight curve of premature infants, (*b*) to deflate the colon in cases of Hirschsprung's disease, (*c*) in nocturnal enuresis, etc. A third preparation is "menformon" in the form of a standardized oestrogenic cream for local application to the skin of the breasts and the vulva.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JANUARY 12 1946

CHILD HEALTH IN BIRMINGHAM

The gift by the Nuffield Foundation of £10,000 a year to the University of London in 1944 to found a professorship and institute of child health has inspired Birmingham to try again—it had tried unsuccessfully twice before, once in 1929 and again in the early part of the war—to set up an organization on similar lines. A scheme for an Institute of Child Health has now received the approval of the Birmingham City Council, and, although Birmingham cannot be said to be the pioneer in this respect, it is hoped that its scheme will present a model of completeness, with all the various services which have child health as their object properly integrated in a way which would not be possible in a smaller city owing to lack of provision, nor in London owing to its vast extent and the variety of its resources. All the preventive and curative agencies, including research and education, will be directed to dealing with disease in children and to raising the standard of child health in the West Midlands area.

To ensure the success of any such scheme a partnership of three is necessary—the children's hospital, the local authority, and the university department. Birmingham is fortunate in commanding for this project the sympathy of all three. Its Children's Hospital—the King Edward VII Memorial—is one of the best general hospitals in the Provinces, with a high reputation as a research centre. It is quite near to the centre of the city, with modern buildings, a good site, a large out-patient department, a fully organized pathological laboratory, a new infants' block carefully planned and not yet in proper use, and a medical staff with a full range of physicians and surgeons in charge of general and special departments who are also engaged in private consulting practice. It has two annexes at Malvern for the treatment of certain clinical types of long-stay patients, and one at Northfield for use as a continuation hospital for infants and nursing mothers.

The second partner, the City Council, had already raised its child health services to a high excellence; its provision for the care of premature infants need only be mentioned. The Education Committee has expressed its desire to be in the scheme at its inception, and it was actually the Maternity and Child Welfare Subcommittee, in warmly supporting new proposals which were broached by the chairman and late house governor of the Children's Hospital, which led to the matter being taken up afresh. On the municipal side the scheme will include the present maternity and child welfare service of the Corporation, the school medical service, and that part of the tuberculosis service which is concerned with children. Presumably the 300 beds for children at the Dudley Road and Selly Oak municipal hospitals will be linked with the scheme. It is expected that other local authorities will participate in due time; as it is, 30% of the patients in the Children's Hospital come from outside Birmingham.

A co-ordinating role will be taken by the third partner, the University, where the Professor of Children's Diseases is Dr. Leonard G. Parsons, well known not only as a paediatrician but as a teacher and administrator, who has obviously taken a leading part in the shaping of this enterprise. When the scheme is more advanced no doubt his title or that of his successor will be changed to that of Professor of Child Health, to emphasize the more positive side which this whole movement signifies. The preventive and sociological aspects will be kept in full view. Each of the three partners will be able to make its own contribution to the study of the social conditions under which children in Birmingham and in the Black Country live—the Children's Hospital through its almoners, the local authority through its health visitors, and the University through its Department of Social Medicine.

It is hoped eventually to build an Institute of Child Health adjacent to the Children's Hospital. For the present, however, much of the work will be housed at the Carnegie Institute, which was originally designed as a model child welfare centre. It is anticipated that the management of the scheme will be in the hands of a council representative of all three partners, the Children's Hospital being represented by members of its medical committee and lay board; the local authority by its medical officer of health and other medical officers and members of the committees concerned; the University by its Vice-Chancellor, other members of its Council, and its Professors of Child Health, Obstetrics and Gynaecology, and Social Medicine. Certain suggestions, which cannot yet be complete, have been made for staffing. The present holder of the Chair of Children's Diseases is a part-time officer; his successor would devote the whole of his time to this post; he would also be consultant to the child health services of the city, physician to the Children's Hospital, and visitor to the municipal Babies' Hospital at Cranwell Hall. With him would be two University Readers, one of whom would be responsible for the organization of undergraduate and postgraduate training in the preventive aspects of child health, and a lecturer in child welfare. All the members of the honorary staff of the hospital would be clinical lecturers in the medical school, and would be available for consultations at the child welfare centre at the Carnegie Institute. With each of the four or five physicians of the hospital, who would also be engaged in private practice, there would be associated a clinical assistant selected, like the lecturer on child welfare, from among the whole-time medical officers of the local authority. Each of these clinical assistants would act as medical officer at certain stipulated times in the wards and out-patient department. It is suggested that there should be three medical units in the hospital, each consisting of physician, assistant physician, clinical assistant, and house-physician. A fourth registrar would be attached to the infants' block, the pathologist, or the research department. The service, when it is fully established, is expected to cost from £15,000

to £18,000 a year, and this will be borne about equally between the three partners.

The Children's Hospital at present has 248 beds in use, with about 8,000 in-patients and 19,000 out-patients a year. The surveyors who were appointed by the Ministry of Health to survey the hospital facilities of the West Midlands area—Mr. J. B. Hunter, Dr. R. Veitch Clark, and Sir Ernest Hart—reported that the beds available for children in Birmingham are not sufficient for the city and for the specialized orthopaedic service which will have to be provided in Birmingham for the West Midlands area. They point out the importance of beds, because children's diseases do not lend themselves to waiting-lists. One of their recommendations is that the Children's Hospital should be brought up to the 350-bed maximum desirable on the site, thereby affording better facilities for the grouping of cases. Another suggestion of theirs is that the general hospitals, municipal and voluntary, should each have an adequate paediatric department directed by a paediatrician who should preferably be on the staff of the Children's Hospital. They even go further in anticipating the new scheme by urging increased integration of the activities of the Children's Hospital and the Hospital Centre with the maternity and child welfare and school medical service of the Corporation. Apart from what the scheme promises for the health of the children of the West Midlands and the example which it will set to other centres, it provides an admirable instance of co-operation between municipal and voluntary enterprise in a most obvious and necessary field.

SOLUBILITY OF SULPHONAMIDES

It has long been recognized that the physical properties of drugs have a profound influence on their clinical use and effectiveness; such properties as solubility in water or fat solvents, and acidic or basic character, influence not only the ways in which drugs can be administered but also the ease of their absorption, their distribution throughout the tissues, and their potency in any given situation. In recent years attempts have been increasingly made to put these effects upon a quantitative basis, and the article by Prof. H. A. Krebs and Dr. J. C. Speakman in this issue is an important contribution to studies of this kind. They are concerned with the relation between the solubility and the acidic character of sulphonamides.

The sulphonamides are sparingly soluble substances with both acidic and basic properties, but within the physiological range of *p*H the acidic properties appear to be predominant. Like most insoluble organic acids, sulphonamides form soluble salts and are therefore soluble in alkaline solutions. When the salt of an organic acid is dissolved in water an equilibrium is set up between the anions of the salt and the un-ionized acid molecules, and the proportion of un-ionized molecules will depend upon the strength of the acid and upon the *p*H of the solution; the weaker the acid the greater the proportion of un-ionized molecules at a given *p*H. The number of un-ionized molecules is, however, limited by their solubility, so that at any given *p*H the total solubility (un-ionized molecules plus anions) will depend upon the strength of the acid. The strength of an acid is usually measured by its acid dissociation constant K_A or by its negative logarithm pK_A. A knowledge of K_A enables us to calculate the proportions of ionized and un-ionized molecules, and, consequently, if we know the solubility of the un-ionized molecules we can calculate the total solubility at any given *p*H. Krebs and Speakman describe a method of measuring both K_A and the solubility of the un-ionized molecules, which they designate S°, by two measurements of total solubility at two different *p*H values. Their results demonstrate that the sulphonamides are much more soluble in buffered solutions at *p*H 7.4—the approximate *p*H of plasma—than in simple aqueous solution, and provide a rational explanation of this greater solubility. The attainment of an effective bacteriostatic concentration in the tissues is thus seen to be at least partly dependent upon the strength of the sulphonamides as acids. The question which naturally leaps to the mind is whether the anion or the un-ionized molecule is the effective bacteriostatic agent. No certain answer can as yet be given to this question, but its importance can be illustrated by examples of other drugs.

Because a drug is administered as a neutral salt it does not necessarily follow that the pharmacologically active agent is the ion of the salt. Thus it is not the mandelate anion which is bacteriostatic in urine, but un-ionized mandelic acid, and hence the need for maintaining an acid urine when this drug is being used. Similarly, it is not the cation of a local anaesthetic salt which possesses anaesthetizing properties for sensory nerves, but the un-ionized base. A good local anaesthetic must then be a sufficiently weak base to produce an adequate proportion of un-ionized molecules of base at the *p*H of the tissues; at the same time it must not be so weak a base that the concentration of un-ionized molecules at the *p*H of the tissues exceeds the solubility of the base; otherwise the local anaesthetic will be precipitated. The good local anaesthetic requires an appropriate balance of these two properties—basic strength and solubility—and it may well be that the bacteriostatic properties of sulphonamides also depend upon a balance of two properties—acidic strength and solubility in water. The solution of this problem would provide a valuable guide not only to the synthesis of new drugs of the sulphonamide type but also to the use of sulphonamides in particular physiological situations.

PENICILLIN IN ACUTE OSTEOMYELITIS

Sir Howard and Lady Florey,[1] reporting their first therapeutic trial of penicillin in osteomyelitis, prophesied in 1943 that a time might come when that disease, treated early and intensively with penicillin, would not require surgical intervention. Recent papers by Altemeier and Helmsworth[2] and by McAdam,[3] suggest that the Floreys' early prophecy is close to fulfilment.

The more important conclusions reached in the two papers are in close agreement, and may be summarized

1 *Lancet*, 1943, **1**, 387.
2 *Surg. Gynec. Obstet.*, 1945, **81**, 138.
3 *Brit. J. Surg.*, 1945, **33**, 167.

briefly. (1) A suitable daily dose is 100,000 Oxford units administered by continuous intramuscular drip or by three-hourly injections. (2) Treatment should be continued for at least two weeks, or until three specimens of pus obtained by an intrametaphysial needle are sterile (McAdam). (3) Ancillary surgical measures should be limited to the immobilization of the affected limb, the incision of abscesses, the late removal of large sequestra, and the insertion on occasion of a sternal-puncture needle into the metaphysial focus. Marrow drainage, performed in five of McAdam's patients, and these not the most severely affected, was followed in at least two cases by wide sequestration and persistent sinuses. (4) Penicillin therapy should be established for twenty-four hours before any surgical procedure, even the opening of an abscess, is undertaken. (5) With adequate penicillin administration an initially positive blood culture becomes negative after three days or so. (6) The patient's general condition improves, but only after a few days' treatment. (7) The initial temperature, continuing high for a few days, falls gradually to normal after a week or more. (8) Metastatic foci present when the patient is first seen respond well to suitable surgical procedures during penicillin administration; new metastatic foci are not likely to develop once treatment is begun.

The radiological record of the behaviour of an infected bone under the influence of penicillin is interesting. The characteristic feature is a mottled demineralization, which proceeds to a maximum translucency weeks, or months, after all infection has subsided, and which is ascribed to a post-infective absorption of lamellae killed during the infective period. Quite large sequestra sometimes fade gradually, and in both papers an analogy is drawn between this phenomenon and the absorption of sterile bone-chips transplanted to fill a defect. In both circumstances demolition must be complete before reconstruction can proceed.

McAdam has inserted a sternal-puncture needle directly into the infected metaphysis, as suggested by Aird.[4] Pus can be withdrawn immediately to decrease tension in the metaphysial abscess, and to permit precise diagnosis and an estimation of the penicillin-sensitivity of the responsible organism. If the needle is left in place, and if specimens of pus are withdrawn at intervals, the time of sterilization, when penicillin administration can safely be discontinued, is precisely known. Further, the needle offers for continuous penicillin administration an alternative (intrametaphysial) route, by which can be attained not only a high blood level of penicillin but also a high local concentration, which may be particularly valuable if an adjacent joint—the hip, for example—has been directly infected. Only one of McAdam's 40 patients died, from an infection by a partially penicillin-resistant *Staph. aureus*. Altemeier and Helmsworth, in 34 cases, had also one fatality—a case of severe haematogenous osteomyelitis of the tibia neglected for fourteen days; death took place seventeen hours after admission to hospital. The fatality rate of osteomyelitis is a notoriously fallacious criterion of the efficacy of a form of treatment, so much does the disease vary in severity from year to year and from lustrum to lustrum in an irregular epidemiological curve. Yet a fatality rate of 2.8% in the combined series of 74 cases, of which more than half had positive blood cultures, supports McAdam's conclusion that "recovery can be anticipated in every patient with acute haematogenous osteomyelitis treated with penicillin, provided that the infecting organism is penicillin-sensitive, and the patient is not *in extremis* when first seen."

[4] *Proc. roy. Soc. Med.*, 1945, **38**, 569.

THE LEAGUE OF NATIONS IN THE WAR

The report on the work of the League during the war[1] by the acting Secretary-General (Mr. Seán Lester) is to be submitted to the League of Nations Assembly which will be convoked in 1946, presumably for the last time. It is a printed document of 167 pages. The first chapters describe the non-political activities which were carried on in Geneva, in America, and in London during the war. Such activities covered various fields: economic, financial, communications and transit, health (14 pages), control of the drug traffic (32 pages), social questions, legal questions, etc. Other chapters deal with internal matters, such as budget and staff. The report is likely to be the last comprehensive statement on activities submitted by the acting Secretary-General before the winding-up of the League. The introduction gives the reasons why activities have been maintained, noting especially their usefulness with regard to post-war reconstruction. The problems connected with a possible transfer to the United Nations are also mentioned. They will be fully reported upon after the reception of proposals from the United Nations and the contemplated preliminary discussions with the Supervisory Commission of the League. The introduction also tries to assess the value of the first experiment in world organization. While non-political activities have survived the war, and may to a great extent be taken over by the new organization, the political provisions of the Covenant were left in abeyance and have now been suspended. One of the main lessons of the past is that the success of the fresh experiment will depend less on machinery than on a new spirit in peoples and their leaders. "The powers of destruction which would be let loose in a new conflict do not permit the envisaging of a possible failure."

STATISTICS AND THE M.O.H.

Medical officers of health, to judge from their annual reports, differ widely in the use they make of statistics. Some of them dismiss the vital and morbidity statistics of their area with a mention; others give long tables of mortality rates and notifications of cases and compare the year under review in all these respects with many previous years. Carlyle put into the mouth of an anonymous statesman the remark—which has been quoted most unscrupulously in every sort of argument ever since—that figures can be made to mean anything. An outsider attending, let us say, the meetings of the Royal Statistical Society, more particularly its recently revived Research Section, would not subscribe to that easy judgment, but he would agree that statistics rarely carry the significance which a superficial reading of them suggests.

It is perhaps because there are several ways of looking at statistics that we have two successive presidents of the Society of Medical Officers of Health—the president for the current year, Dr. J. Johnstone Jervis, and his immediate predecessor, Prof. R. M. F. Picken—in their respective presidential addresses speaking of the statistical method in contradictory terms. Prof. Picken reminded us that earlier medical officers of health made full, if not always very skilled, use of statistical inquiry, and thereby did much to awaken the minds of the lay public and of other members of the profession to public health problems. It might be, he said, that nowadays expert statisticians had raised so many statistical bogies that the medical officer of health was being frightened off this field. He also referred to the possibility of a new system of collecting morbidity statistics, showing, for example, in an area, what diseases and dis-

[1] George Allen and Unwin, Ltd., 40, Museum Street, W.C.1. Price 2s.

abilities affected different age, sex, occupational, and social groups, and he suggested that there was scope for specializing, as did our fathers in public health with much less material, in the interpretation of statistical information. On the other hand, Dr. Johnstone Jervis confessed himself disturbed by the suggestions that in the new order one of the main preoccupations of the medical officer of health will be demography. He had always contended that to obtain the maximum advantage from a statistical evaluation of medical material the services of an expert statistician were required, and that very few medical officers could claim to be experts in this field. He agreed that the medical officer should compile certain statistics for his area, but statistics "can be time-consuming, and unless he is prepared to let other work go by default and to sacrifice some of his leisure the average medical officer of health simply has not the time to devote to them."

Between these divergent views it is difficult for those who are neither in public health nor in statistics to express an opinion. No one would suggest that the medical officer of health should become a mechanical tabulator, but surely his main preoccupation is the study of man in the mass and not man as an individual, and to prosecute this study efficiently he must do it with the instrument of statistics. Knowledge so gained should enable a medical officer to make a fully delineated "map" of his area which would, for example, indicate the need for special precautions at certain points and for particular concentrations of effort, and enable the machinery of public health to be used more effectively, more economically, and with less likelihood of error. To quote a wiser remark from Carlyle, "The judicious man looks at statistics, not to get knowledge but to save himself from having ignorance foisted upon him." It is not merely technical knowledge and mathematical skill which are required in handling statistics: it is a quality which Prof. Major Greenwood, in a recent speech at the Royal Statistical Society, described as something akin to what in the medical profession is called clinical instinct: perhaps it is a flair, or, less mysteriously, just the absence of a fear of figures, combined, in the case of medical statistics, with medical knowledge.

THE TAVISTOCK CLINIC

The Tavistock Clinic (the Institute of Medical Psychology) was founded by Dr. Crichton-Miller and a small group of colleagues in 1920, largely as a result of experiences of the 1914–18 war. By 1939 the Clinic was treating psychologically both adults and children from all parts of the British Isles. It was also undertaking postgraduate medical education in the diagnosis and treatment of neurosis, as well as research projects, aided by grants from the Rockefeller Foundation, the Halley Stewart Trust, and other bodies. On Dec. 11, after a wartime migration to Westfield College, Hampstead, and the bomb-destruction of its old premises in Bloomsbury, the Clinic reopened at No. 2, Beaumont Street, Marylebone, a large house which was formerly a nursing home. Lord Alness, the chairman, told those assembled for the house-warming, which coincided with the twenty-fifth birthday of the Clinic, that before the war it had provided lecture courses for upwards of 2,000 medical men and women and a thorough two years' training in this field for about 100. In 1939 a medical staff of 90, largely unpaid, provided 26,000 hours of treatment. Later about 40 of the staff were called up, but the work had continued. The problems to which they had to address themselves now included post-war breakdown, child delinquency, training for doctors in these subjects, and assistance to industry in the field of psychological medicine.

The Tavistock Clinic confines itself to the treatment of cases of neurosis. It tries not to overlap the work of other institutions dealing with more serious breakdowns. It is especially concerned with cases of irrational anxiety, hysterical conditions, obsessions, and conduct disorders. Every patient obtains on the average 26 hours of a doctor's time. A careful follow-up of pre-war patients has shown that 50% of adults and 70% of children have maintained their cure. The number of people needing treatment now is not fewer than it was 25 years ago, and there is greater awareness of the need and readiness to seek it.

Dr. J. R. Rees, medical director and one of the original eight, who has worked there during the whole of the 25 years, pointed out that over 30% of all the medical discharges from the Army, to which he was consulting psychiatrist, had been on psychiatric grounds, and that figure was paralleled by the discharge rates in the other two Services, and rather exceeded by the figures for some of our Allies. The great majority of these were not catastrophic breakdowns but cases of neurotic disturbance or difficulty. With so many potential patients the Clinic would have to try new methods. Some experiments in group rather than in individual treatment had already been started. Another important task was the prevention of breakdown.

General Sir Ronald Adam, Adjutant-General since 1941, spoke on selection methods in the Army. Selection procedure—the finding of the man for the job—had done much for morale. The men who, after training, might be unsuitable for front-line work had a psychological interview, and on the results of that interview were placed in other jobs. Men who had qualities of leadership were earmarked at the outset. In problems of morale, particularly in the Far East, psychiatrists were constantly used by commanders at all levels. Another task in which psychiatrists and psychologists had done great work was in civil resettlement units, which had proved very successful. He thought that post-war industry could learn something from the methods pursued in the Army. The Civil Service, both at home and in India, were using adaptations of Army methods for personnel selection, and there were other aspects of Army experience, such as the discussion group idea, which should have their counterpart in industry.

As to the future of the Tavistock Clinic, Lord Alness indicated that this must be measured in terms of finance. To function properly the Clinic requires an income of at least £10,000 a year. Only £3,000 of this can be expected to come from patients.

THE HALF-YEARLY INDEXES

The half-yearly indexes to Vol. I of the *Journal* and the *Supplement* for 1945 have been printed. They will, however, not be issued with all copies of the *Journal* but only to those readers who ask for them. Any member or subscriber who wishes to have one or both of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Accountant, B.M.A. House, Tavistock Square, London, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

Kodak Ltd. have presented to the Royal Society of Medicine the Kodak Medical Film Library. The library service for these films is now operated by the Society, and all correspondence should be addressed to the Film Librarian, Royal Society of Medicine, 1, Wimpole Street, London, W.1. This library, which was first made available to the medical profession by Kodak Ltd. in the year 1930, has served a useful purpose in establishing the value of the motion picture in medicine.

EFFECT ON TROOPS OF THE "V" WEAPON BOMBARDMENT OF ANTWERP

BY

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As a medical officer in charge of a medical inspection room in Antwerp since Sept., 1944, I have had an opportunity of studying the effects of flying bombs and rockets on military personnel stationed in my area. My report must necessarily be incomplete, as an efficient follow-up has been wellnigh impossible, owing to the large turnover of troops and to the speedy evacuation of those requiring hospital treatment. I am therefore confining myself to the presenting symptoms of "exhaustion"* and to a few general observations.

Details of the Report

A statement issued by the H.Q. in this area announced that between Oct. 7, 1944, and March 30, 1945 (175 days) the total fall of shot reported was 5,960 (4,248 "V 1" and 1,712 "V 2"). Of these, 3,709 (2,248 "V 1" and 1,261 "V 2") fell on Greater Antwerp and arrondissement—an area of 391 sq. miles (1,012.69 sq. km.)—and 1,214 on Greater Antwerp itself—an area of 65 sq. miles (168.35 sq. km.). All troops attending this M.I. room were stationed in the Greater Antwerp area, where an average of 18.67 bombs fell into the square mile (2.59 sq. km.).

My report covers a period of four months from Nov. 19, 1944, to March 10, 1945, when the attack on Antwerp was at its height. During this time 1,780 new patients reported to the M.I. room. This represents an average daily sick rate of 6.4 per 1,000 men, and of these, 63 (i.e., 3.5% of total sick—a daily rate of only 0.22 per 1,000 men) were diagnosed as cases of "exhaustion." During this period this M.I. room was responsible for some 5,000 line-of-communication troops, and on the average these units remained here for only two or three months before being replaced by fresh troops. Ten units, however totalling just over 1,000 men), were in my area for the whole period of four months, and they produced 60.3% (38 out of 63) of the cases of "exhaustion," while the remaining 25 cases came from a total strength of over 4,000.

Classification of Cases

These cases could be classified into two main types, depending on their presenting symptoms.

Type 1 consisted of those who showed all the classical signs and symptoms of fear, ranging from mild cases to extremes of panic. The patient, on first reporting sick, would admit at once to being afraid. He may have taken several days or even weeks to make up his mind to report sick—until the matter was settled, once and for all, by some particular incident or experience. Once decided, however, he made no attempt to conceal or minimize his feelings; on the contrary, the trouble was often obvious from his speech and general behaviour before he had completed his "history." He expressed his fears in a variety of ways, but he never had any doubt as to their cause.

All degrees of severity were encountered. The patient complained merely of not feeling quite himself or of feeling run down and continually tired, or even tendered a direct request to sleep on the ground floor. He sometimes complained of sweating, cold shivers, trembling, twitches, loss of appetite, and palpitations, and said that he had lost all interest in his work and ability to perform it efficiently. He no longer enjoyed his previous pursuits of leisure hours, such as reading, writing home, or visiting the local cinemas and cafés, and instead became moody and irritable, and preferred his own company. He found the nights worse than the days, and remained awake, restless and on edge, waiting for the least sound of distant gunfire or the approaching bomb. If sleep, once achieved, was disturbed in the early hours, he lay awake for the rest of the night. On hearing a bomb approaching he either found himself unable to move, cowering under the bedclothes, or rushed wildly about the room, panting for breath or shouting till he "took cover" in a corner or lay exhausted on the floor. He often remained in such a state long after the danger had passed. It was noted that if an "incident" occurred while being examined he became pale, trembled, sweated, and exhibited tachycardia.

Type 2 consisted of those who complained of some specific symptom or symptom-complex such as headache, dyspepsia, insomnia, or loss of weight, without any obvious manifestation of fear. Some information as to the underlying cause of the complaint could normally be elucidated from their "history," or, more easily, from a friend, but it was usually not possible to pronounce a definite diagnosis till physical and, in some cases, special examination had excluded the possibility of any organic basis. In contrast to Type 1, fear was never the predominant manifestation, and, moreover, the patient would not readily admit that he was afraid.

Case Reports

Case 1.—Driver A. Stated age, 45; true age, 49. Reported sick in Feb., 1945, complaining of severe frontal and occipital headaches, tiredness, pain in the back, and loss of appetite. He said that in the last four days he had taken 100 aspirin tablets to relieve his headache (new bottle of aspirins found on him), and that he was not worried unduly by the flying bombs. On examination it was found that he had scabies; nothing else abnormal. Was seen under escort as charged with absence without leave. Information gathered from an N.C.O. in his company was that he was extremely nervous and rushed about when he heard a flying bomb approaching. Known throughout his unit as "Bombhappy."

Case 2.—Lieut. B., aged 29. Served with the A.E.F. in 1940. Evacuated from France in transport ship which was dive-bombed and sunk with heavy loss of life. Rescued from the sea after swimming about for some time. Later served in England during the air raids. After three months' stay in Antwerp he was visited in his quarters, where he complained of bouts of diarrhoea, weakness, loss of appetite, tiredness, and generally feeling "out of sorts." Admitted that he slept very little at night owing to a state of tension. On examination his temperature was subnormal and pulse rapid; nothing else abnormal. Had never mentioned his symptoms to his fellow officers, though they had noticed him becoming very quiet and increasingly nervous. Admitted to hospital, where he was treated with prolonged narcosis. Now back on duty in B.L.A.

Headache, the commonest of all the symptoms, was the primary one in 14 cases. The usual site was occipital, followed by temporal, frontal boring through to the occiput, and purely frontal (bilateral or unilateral), in that order. The headaches were constant throughout the day, and were unaccompanied by visual disturbances, nausea, or vomiting. They were only partly relieved—if at all—by aspirin or codeine tablets, and were aggravated by noise and worry. Some of these cases were sent as hospital out-patients, with the tentative diagnosis of sinusitis or eye-strain, producing negative results. In the main, however, the site and nature of the headaches and the variety of accompanying symptoms made the diagnosis generally clear.

The morning sick parades were seldom completed without one or two cases of dyspepsia, and its differential diagnosis at any time presents difficulties. Only those cases (8 in number) associated with obvious psychological abnormalities are thus included in this report. Epigastric discomfort, rather than actual pain, was the usual symptom; it had no definite relation to the quality or quantity of food taken, and occurred at varying times after meals. The patient was free from it only for brief periods throughout the day. Some complained of nausea but none of vomiting. Loss of appetite, loss of weight, insomnia, backache, palpitations, sweating, localized pain over the heart, and shortness of breath formed the majority of the remaining symptoms. There were also 2 cases of enuresis, 1 of masturbation, and 1 showing marked symptoms of depression and persecutional delusions.

Previous experience of heavy air raids or front-line service certainly seemed to give rise to earlier and severer symptoms (see Case 2). This was especially noticeable in the case of three men who, after being admitted to hospital from Normandy and Holland as psychiatric casualties, had been discharged and posted to units stationed in Antwerp. After a stay here of only a few days all three reported sick with a recurrence of their original symptoms, and required evacuation.

* The term "exhaustion" is used in this report to cover all cases showing anxiety or other psychiatric symptoms, whether they needed admission to hospital or not (vide "Memoranda of Medicine" 3, H.Q., 21 Army Group, May 8, 1944). It does not include casualties from bomb incidents.

Disposal and Treatment

The disposal and treatment of these cases were as follows: 19 out of 63 (30.1%) required evacuation to hospital, some others were admitted as out-patients, while treatment for all the milder cases was carried out in unit lines, and consisted of reassurance and if necessary rest and sedation. For this purpose barbitone soluble (10 gr. (0.65 g.) nightly or 5 to 10 gr. (0.32 to 0.65 g.) three times a day) was given. In most cases this was sufficient, but if no improvement was noticed after a few days' treatment a specialist's opinion was sought. Some of the more chronic cases of Type 2 were recommended phenobarbitone 1/2 gr. (32 mg.) t.d.s. for periods of two to four weeks.

Reassurance was considered of prime importance in the immediate treatment; this consisted either in persuading the man who admitted that he was afraid that his was by no means a unique case—indeed, everyone to a greater or lesser degree was feeling like him—or in persuading the man who complained of severe headaches or pain over the heart that he was not suffering from a brain tumour or an incurable heart disease. Where possible, arrangements were made with the unit for the patient to be transferred to its detachments outside the Antwerp area.

Observations

A few general remarks might here be made about the effects of the bombs on the mass of the troops stationed in my area. Many units for months on end were working at high pressure in most vulnerable surroundings, as in petrol or port installations. Few units were fortunate enough to escape having some casualties, and most of us had our full quota of near misses. It was natural enough, therefore, that we all became heartily sick of these things, and many admitted to me, after it was all over, that they felt they could not have stood up to it much longer. The night-time was a much greater strain than the day fully occupied on duty, and men were generally liable to smoke and drink more than usual.

I have yet to meet the man who was totally unaffected by these bombs—I doubt if he even exists. Many felt tired owing to repeated sleepless nights. To begin with we were able to sleep during the attack—unless one fell too close; but after a time we found ourselves constantly listening for the drone of the engines, following their flight down to earth—and then waiting for the next one.

The lack of this anticipation is one of the things to be said for the rockets, which arrived without preliminary warning; for even a door banging or the sound of a factory siren was liable, after a time, to worry us.

Summary

A series of 63 cases of "exhaustion" seen over a four-months period of the bombardment of Antwerp are reviewed. They are classified into two main types according to their presenting symptoms. No more specialized classification has been attempted.

Treatment consisted of reassurance, rest, and sedatives, in unit lines where possible. Of the cases 30.1% were severe enough to warrant admission to hospital.

The report ends with a few general remarks about the reaction of the mass of the troops to the attack.

REPORT ON MENTAL NURSING

Recommendations designed to give mental nursing a status equal to that of any branch of nursing are contained in a report issued by the Minister of Health and the Minister of Education. The report[1] is that of the Subcommittee on Mental Nursing and the Nursing of the Mentally Defective, appointed by the Athlone Interdepartmental Committee on Nursing Services. Mr. Bevan recently described the report in Parliament as a most valuable survey, and said he proposed to obtain without delay the views of the various interested bodies regarding the recommendations, many of which would require legislation.

General Recommendations

The subcommittee considers that the mental nursing service should be held to be comparable in status to any branch of the nursing profession. "That it is not so is to a large extent due to the public attitude towards mental illness, which involves ignorance of the high qualities of mind and body demanded from the mental nursing service. There are some 29,000 nurses employed in this service—16,400 women and 12,600 men—and we think that, if recruitment is to be stimulated and the quality of the recruits improved, all possible steps must be taken to give the mental nurse a status comparable to that occupied by the nurse engaged in general sick nursing." Among the main recommendations are:

State Registration.—Qualified mental nurses should be registered by a statutory body; registration on a supplementary part of the State Register is not satisfactory. All nurses on the Register should be entitled to the designation "State-registered Nurse." There should be one recognized qualification for the mental nurse instead of alternative examinations of the Royal Medico-Psychological Association or through the General Nursing Council: the sole responsibility should rest with the General Nursing Council, subject to certain conditions, which include protection for those now holding R.M.P.A. certificates. If these conditions cannot be agreed, the subcommittee recommends legislation to establish a separate statutory body similar to the Central Midwives Board.

Recruitment and Training.—Engagement of female nurses should be the responsibility of the matron, and recruits should have a medical and *x*-ray examination before starting work. A preliminary training of at least one month is recommended before entrance to hospital. Higher posts in mental hospitals should be held only by nurses with the double qualification of mental and general nursing.

Conditions of Service, etc.—Scale of salary for the mental nurse should be higher than that for the general trained nurse. On hours of work, the introduction of a 96-hour fortnight generally is an essential step. Legislation is needed to ensure that nurses in certified institutions for the mentally defective should be superannuated on the same basis as nurses in mental hospitals. Under the Superannuation Acts female staff should be permitted to retire at 50. There should be interchangeability of pension rights from general hospital nursing to mental hospital nursing, and vice versa. Student nurses, particularly girls, should normally live in the hospital, with permission to live out if the hospital authorities are satisfied this is in the best interests of the nurse. All trained mental nurses should be entitled to permission to live out. Ward maids should be employed. Where possible the ratio of nurses on day duty to patients (1 nurse to 11 patients) should be substantially reduced.

Status of Mental Nursing

The subcommittee has no doubt that there still exists an unfortunate impression that the nursing of the mentally ill is, somehow or other, an occupation inferior to the nursing of the bodily sick. This impression contributes as much as any other factor to the difficulty which mental hospitals experience in obtaining enough female staff. It is a matter of national importance that the modern outlook on mental illness should be understood and that the value and interest of mental nursing should be recognized. While no other form of nursing makes greater demands upon the nurse, there is another side: asylums for detention and protection of the inmates have given place to mental hospitals, fully equipped with a view to the recovery of the patients.

Great advances have been made in recent years, and modern methods of physical treatment require specialized training. The medical staff now need highly skilled mental nurses to assist in carrying out the detailed technique of such methods of treatment as malaria therapy, convulsive therapy, insulin treatment, and prolonged narcosis. In all these the preparation of the patient and the equipment, the care of the patient during treatment, and the subsequent nursing demand much skill and knowledge.

On thorough investigation most cases of mental illness are found to be the result of a combination of physical and psychological factors. It follows, therefore, that the mental nurse has also to receive an adequate training in the nursing treatment of bodily ailments and diseases, both surgical and mental. There is every justification for the recognition of mental nursing as a highly skilled branch of the profession and entitled to a worthy status. The traditional stigma attached to mental illness has not yet been eradicated from the public mind, but there are signs that a more enlightened view is developing, and much could be done by judicious publicity on behalf of the mental nursing service to dispel the public feeling that contact with the mentally ill is something to be avoided.

Discipline, Food, and Recreation

The discipline of the hospital should not extend to the nurse when off duty. She should then, so far as is possible, have the personal liberty of a private individual. A small standing committee or nurses' council should be set up in each institution to scrutinize the rules, consider grievances, and suggest reforms. The cafeteria system of feeding should be introduced where possible. There should be provision for obtaining light meals and for the entertainment of

[1] Nursing Services Interdepartmental Committee: Report of Subcommittee on Mental Nursing and the Nursing of the Mentally Defective. H.M. Stationery Office. (1s.; post free 1s. 2d.)

guests of both sexes in every nurses' home. Facilities for outdoor games should be available for nursing staff, and social activities and the formation of social clubs should be fostered. "Any attempt to segregate the staff is in these days an anomaly, and, if persisted in, can only lead to discontent and friction." Hospitals in rural areas might be able to organize transport to the nearest town for the use of nurses during off-duty time.

THE TEACHING OF TUBERCULOSIS

The following Memorandum on the Teaching of Tuberculosis to Medical Students has been issued by the Tuberculosis Educational Institute, Tavistock House North, Tavistock Square, London, W.C., over the signatures of Dr. Frederick Heaf (chairman) and Dr. Harley Williams (secretary):

No one will deny that the teaching of tuberculosis to medical students is far from satisfactory. It is still only too common an experience to find that a newly qualified practitioner's only acquaintance with tuberculosis is based on physical signs of cases in advanced stages of the disease and a very theoretical knowledge of sanatorium routine. The vast field of the preventive and socio-medical side of the subject and even the importance of early diagnosis are largely unknown to him, so that he enters practice quite unable to appreciate the significance of one of the commonest and most serious diseases.

In the Goodenough Report on Medical Schools it is stated that the present facilities for teaching tuberculosis vary considerably in teaching centres, and it gives two examples which indicate the differences which exist in the nature of the instruction, showing how it depends mainly on the presence or absence of a tuberculosis department or dispensary attached to the hospital of the medical school. The situation as it was in 1939 is summarized at the end of the report. At that date, of the 25 medical schools in England, Scotland, and Wales, 12 provided teaching in tuberculosis, but not in the main hospitals. Of these 12, nine made use of the treatment beds of the local authority. Four teaching hospitals made use of the facilities at special chest hospitals. Only two hospital medical schools had beds of their own reserved specially for tuberculosis cases. It would appear that in over 50% of the medical schools it was only by good fortune and not by any arrangement on the part of the authorities that the student was able to acquire knowledge on tuberculosis. In such schemes where it was possible for the student to take a course in tuberculosis it was usually quite optional and dependent on the personal inclination of the student himself. It not infrequently happened, therefore, that the student passed through his medical training seeing only a few cases of pulmonary tuberculosis, and if he did it would be those with advanced disease, so that the mental picture he formed of the disease would be one of crepitations, rales, and pulmonary cavities, and a hazy idea that all such patients require sanatorium routine with the addition of artificial pneumothorax treatment if it could be given. It is not surprising, therefore, that he does not recognize the disease until it has reached this advanced stage.

A more recent survey made by the Tuberculosis Educational Institute has revealed some improvement in the situation, particularly in the Northern medical schools. In nine teaching schools compulsory courses in tuberculosis are arranged and short periods of residence at the local authority's sanatorium are included in the curriculum. A number of visits are paid to the local dispensary so that the student begins to appreciate the socio-medical side of the problem and the value of early diagnosis. These arrangements all show how necessary it is for educational purposes to link up the tuberculosis services of the local authority with the medical schools. In this matter local authorities might use the old advertisement slogan, "You want the goods—we have them."

The committee of the Tuberculosis Educational Institute has given considerable attention to the undergraduate and postgraduate facilities for studying tuberculosis in all parts of the country, and it feels that the time has come to emphasize the need for putting tuberculosis tuition in a more prominent position in the medical training of the student and to arrange, uniformly in all schools, easy access to the local authorities' tuberculosis services so that the vast amount of material being dealt with at the many dispensaries and sanatoria in the country may be used for the teaching of tuberculosis in all its aspects.

The committee strongly supports the recommendation in the Goodenough report that there should be a tuberculosis dispensary at or adjoining every parent teaching hospital and that in-patient facilities for cases of both pulmonary and non-pulmonary tuberculosis should exist in one or more of the hospitals constituting the teaching centre, provided there is a chest physician or orthopaedic surgeon in charge of the beds, or a chest hospital within easy reach. It does not, however, consider that such facilities should exclude from the curriculum a series of visits to sanatoria, for it is almost impossible to convey the meaning of sanatorium treatment to a class of students around the bedside in the wards of a general hospital.

The committee wishes to amplify the scheme of the Goodenough report by suggesting that:

1. The physician in charge of the dispensary and/or the medical superintendent of the sanatorium might with advantage be appointed a lecturer on the staff of the medical school which may be situated within the region or area which the dispensary or sanatorium serves.
2. All medical students must be attached to approved tuberculosis dispensaries as clinical clerks for short periods, during which time they should also become acquainted with the technique and organization of mass radiography.
3. Facilities should be made available for short periods of residence at approved sanatoria for medical students who wish to make a further study of the subject.

It will probably be argued that the medical curriculum is already heavy loaded and it would be difficult to find time for these suggestions. The committee is well aware of this difficulty, but would suggest that those diseases which have the highest incidence should receive priority in a teaching syllabus, even if it meant sacrificing time on the rare conditions which always have a fascination and often assume an exaggerated importance in medical education for a qualifying degree.

MEDICAL NEW YEAR HONOURS

The names of the following members of the medical profession were included in a New Year Honours List published in the *London Gazette* on Jan. 1:

G.B.E. (Military Division)

Lieut.-Gen. Sir ALEXANDER HOOD, K.C.B., C.B.E., M.D., F.R.C.P., late R.A.M.C. Honorary Physician to the King. Director-General, Army Medical Services.

K.C.I.E.

Major-Gen. HEERAJEE JEHANGIR MANOCKJEE CURSETJEE, C.S.I., D.S.O., B.Ch., I.M.S. (I.A.M.C.). Honorary Surgeon to the King. Lately Deputy Director of Medical Services, North-Western Army.

Major-Gen. (local Lieut.-Gen.) JAMES BENNETT HANCE, C.I.E., O.B.E., M.D., Director-General, Indian Medical Service.

K.C.V.O.

Brig. Sir STEWART DUKE-ELDER, M.D., D.Sc., F.R.C.S., Surgeon-Oculist to the King. Consultant Ophthalmologist to the Army.

K.B.E. (Military Division)

Major-Gen. (Temp.) FRED THOMPSON BOWERBANK, O.B.E., *M.C.*, M.D., F.R.C.P.Ed., F.R.A.C.P., N.Z.M.C. Honorary Physician to the King. Director-General, Medical Services of N.Z. Army and Air Forces.

Acting Air Vice-Marshal STANFORD CADE, C.B., F.R.C.S., R.A.F.V.R. Consultant in Surgery, R.A.F.

Temp. Surg. Rear-Admiral GORDON GORDON-TAYLOR, C.B., O.B.E., M.S., F.R.C.S., Consultant Surgeon, R.N.

Major-Gen. (Temp.) WILLIAM HEANAGE OGILVIE, M.D., M.Ch., F.R.C.S., late R.A.M.C. Consultant Surgeon, Expeditionary Force.

Major-Gen. C. MAX PAGE, C.B., D.S.O., M.S., F.R.C.S., late R.A.M.C. Consultant Surgeon, R.A.M.C.

Temp. Surg. Rear-Admiral RICHARD ALUN ROWLANDS, C.B.E., M.D., F.R.C.P., Consultant Physician, R.N.

Major-Gen. (Temp.) ARNOLD WALMSLEY STOTT, F.R.C.P., late R.A.M.C. Physician to H.M. Household.

Acting Air Vice-Marshal CHARLES PUTNAM SYMONDS, C.B., M.D., F.R.C.P., R.A.F.V.R. Consultant in Neurology, R.A.F.

Knighthood

Major-Gen. RALPH BIGNELL AINSWORTH, C.B., D.S.O., O.B.E., M.R.C.S., Honorary Physician to the King. Director of Medical Services, Joint War Organization of the British Red Cross Society and Order of St. John.

HAROLD ARTHUR THOMAS FAIRBANK, D.S.O., O.B.E., M.S., F.R.C.S. Consultant Adviser in Orthopaedic Surgery, Ministry of Health Emergency Medical Service.

PAUL GORDON FILDES, O.B.E., M.B., F.R.S. Director of Department of Chemical Bacteriology, Medical Research Council.

ARCHIBALD MONTAGUE HENRY GRAY, C.B.E., M.D., F.R.C.P., F.R.C.S. Dermatologist, University College Hospital. Consultant Dermatologist, R.A.F. For special war services.

LIM HAN HOE, C.B.E., M.B., Ch.B.Ed. For public services in the Straits Settlements.

Lieut.-Col. NILKANTH SHRIRAM JATAR, C.I.E., D.S.O., M.R.C.S., I.M.S.(ret.). Inspector-General of Prisons, Central Provinces and Berar.

Lieut.-Col. SAHIB SINGH SOKHEY, M.D., I.M.S. Director, Haffkine Institute, Bombay.

HENRY WADE, C.M.G., D.S.O., M.D., F.R.C.S.Ed. Senior Visiting Surgeon, Bangour Emergency Hospital, West Lothian.

C.B. (Military Division)

Surg. Rear-Admiral ALBERT EDWARD MALONE, M.B., B.Ch., D.P.H., R.N.

Major-Gen. DAVID CARMICHAEL MONRO, C.B.E. M.B., F.R.C.S.Ed., late R.A.M.C. Honorary Surgeon to the King. Professor of Military Surgery at Royal Army Medical College.

Air Vice-Marshal ALAN FILMER ROOK, O.B.E., F.R.C.P. Honorary Physician to the King. Consultant in Medicine, R.A.F.

Major-Gen. TREFFRY OWEN THOMPSON, C.B.E., M.D., late R.A.M.C. Honorary Physician to the King.

C.B. (Civil Division)

Col. LAWRENCE WHITAKER HARRISON, D.S.O., F.R.C.P.Ed. Adviser in Venereal Diseases, Ministry of Health.

SOLLY ZUCKERMAN, D.Sc., F.R.S., M.R.C.S. Scientific Director, Royal Air Force Bombing Analysis Unit. In recognition of distinguished service.

C.M.G.

ROBERT BARR MACGREGOR, M.B., M.R.C.P.Ed., Colonial Medical Service. Director of Medical and Sanitary Services, Malaya.

C.I.E.

Col. SOHAN LAL BHATIA, *M.C.*, M.D., F.R.C.P., I.M.S. Inspector-General of Civil Hospitals, Assam, and lately Deputy Director-General, Indian Medical Service.

C.V.O.

IVAN WHITESIDE MAGILL, D.Sc., M.B., D.A. Senior Anaesthetist, Westminster Hospital.

C.B.E. (Military Division)

Brig. (Local) JAMES DAVIDSON STUART CAMERON, M.D., F.R.C.P.Ed., R.A.M.C.

Air Vice-Marshal FRANK CUNINGHAME COWTAN, C.B., M.R.C.S., R.A.F. Honorary Surgeon to the King.

Brig. (Acting) JOHN MANDEVILLE MACFIE, O.B.E., *M.C.*, M.B., Ch.B., R.A.M.C.

Surg. Rear-Admiral CHARLES FOX OCTAVIUS SANKEY, O.B.E., M.B., B.S., R.N.

Surg. Rear-Admiral FRANCIS JOHN DESPARD TWIGG, M.B., B.Ch., D.O.M.S., R.N.

Temp. Surg. Rear-Admiral ROBERT JOSEPH WILLAN, M.V.O., O.B.E., M.S., F.R.C.S., R.N. Consultant Surgeon to R.N. in Scotland. Emeritus Professor of Surgery in the University of Durham.

C.B.E. (Civil Division)

GEORGE VANCE ALLEN, M.D., Colonial Medical Service. Principal, College of Medicine, Singapore. For services during internment.

Lieut.-Col. RUSTAMJI BAMANJI BILLIMORIA, M.D. Honorary Medical Specialist, Indian Military Hospital, Bombay.

JOHN CRUICKSHANK, M.D., Professor of Bacteriology in the University of Aberdeen. For services to civil defence.

DESMOND WILLIAM GEORGE FARIS, M.B., B.S., Colonial Medical Service. Health Officer, Malaya. For services during internment.

JOHN BOWMAN HUNTER, *M.C.*, M.Ch., F.R.C.S. Section Hospital Officer, London Emergency Medical Service.

DAVID HYND, O.B.E., M.B., Ch.B., Raleigh Fitkin Mission Hospital, Bremersdorp. Territorial Director of the Swaziland Branch of the British Red Cross.

CHARLES FREDERIC WILLIAM ILLINGWORTH, M.D., Ch.M., F.R.C.S.Ed., F.R.F.P.S. Regius Professor of Surgery in the University of Glasgow. Honorary Director of Surgical Services for the E.M.S. in Western Scotland.

THOMAS POMFRET KILNER, F.R.C.S. Nuffield Professor of Plastic Surgery in the University of Oxford. For services to the Ministry of Pensions.

Major-Gen. ROBERT WALTER DICKSON LESLIE, C.B., O.B.E., L.R.C.P. and S.I. Regional Hospital Officer, Region 3, Emergency Medical Service.

THOMAS PORTER MCMURRAY, M.Ch.Belf., F.R.C.S.Ed. Professor of Orthopaedic Surgery in the University of Liverpool. Regional Consultant in Orthopaedic Surgery, E.M.S.

JOSEPH FRANCIS ENGLEDUE PRIDEAUX, O.B.E., M.R.C.S. Deputy Director-General of Medical Services, Ministry of Pensions.

ARTHUR CHRISTOPHER TIBBITS, M.R.C.S., D.P.H. County Medical Officer of Health, Nottinghamshire County Council. For services to civil defence.

O.B.E. (Military Division)

Lieut.-Col. (Temp.) SHIV PARSHAD BHATIA, M.B., B.S., I.A.M.C.

Group Capt. FREDERICK RUSSELL CHISHOLM, M.D., F.R.C.P., R.N.Z.A.F.

Acting Wing Cmdr. EDWIN DONOVAN, M.B., Ch.B., R.A.F.O.

Surg. Cmdr. DAVID DUNCAN, M.D., D.P.H., R.N.

Surg. Lieut.-Cmdr. FRANK POLLARD ELLIS, M.B., Ch.B., R.N.

Col. PAUL CHARLES GABOURY, M.D., R.C.A.M.C.

Squad. Ldr. AGNES CHRISTIAN GILLAN, M.B., Ch.B. Employed with Royal Air Force Medical Branch.

Acting Wing Cmdr. GEORGE BYNG GRAYLING, M.R.C.S., L.R.C.P., R.A.F.V.R.

Acting Wing Cmdr. GEORGE ROY GUNN, M.B., Ch.B., R.A.F.V.R.

Col. (Acting) ERNEST HAMILTON HALL, M.B., B.Ch., R.A.M.C.

Lieut.-Col. (Temp.) GEORGE RONALD HARGREAVES, M.R.C.S. Specialist in Psychological Medicine, R.A.M.C.

Lieut.-Col. (Temp.) WILLIAM HERBERT HARGREAVES, M.R.C.P., R.A.M.C.

Group Capt. JAMES MACCONNELL KILPATRICK, M.B., B.Ch., D.P.H., R.A.F.

Acting Squadron Leader HENRY TRESTON MACAULAY, R.A.F.V.R.

Col. JOHN COMMING MACKENZIE, R.C.A.M.C.

Surg. Cmdr. JOHN WENDELL MACLEOD, R.C.N.V.R.

Lieut.-Col. HARRY EDWARD LE-MASURIER, R.C.A.M.C.

Lieut.-Col. JULES MERCIER, R.C.A.M.C.

Temp. Col. HENRY ALFORD MOFFATT, D.S.O., F.R.C.S., S.A.M.C.

Surg. Cmdr. HARRY STAFFORD MORTON, R.C.N.V.R.(ret.).

Lieut.-Col. WILFRED MERLE MUSGROVE, R.C.A.M.C.

Acting Wing Cmdr. KENNETH BODELL REDMOND, M.B., B.S., R.A.F.O.

Temp. Acting Surg. Lieut.-Cmdr. ATTRACTA GENEVIEVE REWCASTLE, M.B., Ch.B., R.N.V.R.

Brig. (Local) BERNARD EDWARD SCHLESINGER, M.D., F.R.C.P., A.M.S.

Lieut.-Col. (Temp.) PAT ADAM STEWART, M.B., Ch.B., R.A.M.C.

Col. (Temp.) ALFRED SWINDALE, T.D., M.D., R.A.M.C.

Col. (Temp.) ANDREW COPELAND TAYLOR, F.R.C.S.Ed., I.A.M.C. Professor of Clinical Surgery, Prince of Wales Medical College, Patna.

Col. PIERRE TREMBLAY, M.D., R.C.A.M.C.

Col. (Temp.) DONALD GEORGE WALLACE, M.B., Ch.B., N.Z.M.C.

Lieut.-Col. (Temp.) ALBERTINE LOUISE WINNER, M.D., M.R.C.P., R.A.M.C.

O.B.E. (Civil Division)

ERNEST JAMES BLACKABY, M.R.C.S., Colonial Medical Service. Medical Officer, Zanzibar.

Lieut.-Col. CUTHBERT ALFRED BOZMAN, M.B., Ch.B., D.P.H., I.M.S. Officiating Public Health Commissioner with the Government of India.

Col. JOSEPH PATRICK FEHILY, M.B., F.A.C.S., D.P.H., Colonial Medical Service. For services in connexion with the reoccupation of Hong Kong.

Mrs. FREDA EVELYN GIBSON, M.B., B.S., Ceduna, South Australia. For services as a flying doctor on Eyre Peninsula.

BRIAN MAURICE JOHNS, M.B., Ch.B., N.Z., F.R.C.S.Ed., D.T.M. and H., Colonial Medical Service. Surgeon, Malaya. For services during internment.

NICOL CAMPBELL MACLEOD, M.B., Ch.B., D.P.H., Colonial Medical Service. Deputy Director of Medical Services, Hong Kong. For services during internment.

RICHARD ALAN PALLISTER, M.D., M.R.C.P., Colonial Medical Service. Medical Officer, Malaya. For services during internment.

HAROLD ERNEST RAWLENCE, M.D., F.R.C.S.Ed. Residency Surgeon, Srinagar, Kashmir.

Major JASWANT SINGH, M.B., Ch.B., D.P.H., I.M.S. Deputy Director, Malaria Institute of India.

Mrs. MARGARET SMALLWOOD, M.B., B.S., Colonial Medical Service. Lady Medical Officer, Malaya. For services during internment.

DEAN ABBOTT SMITH, M.B., B.Chir., Colonial Medical Service. Medical Officer, Hong Kong. For services during internment.

FREDERICK HILTON WALLACE, M.B., Ch.M. For public and municipal services in Geelong, Victoria.

DONALD MCDONALD WILSON, *M.C.*, M.B., Ch.B. For services to the Casualty Clearing Hospital in the City of Wellington, New Zealand.

M.B.E. (Military Division)

Surg. Lieut. Cmdr. HARRY LYON BACAL, M.D., R.C.N.V.R.

Capt. ABDUL AZIZ BASHIRY, I.A.M.C.

Major EDWARD HORTON BENSLEY, M.D., R.C.A.M.C.

Major (Temp.) IAN MCKINLAY BURNS, M.B., Ch.B., R.A.M.C.

Fl. Lieut. ROLAND UPCHER CARR, M.R.C.S., R.A.F.V.R.

Major HARRY HAMILTON CHACE, R.C.A.M.C.

Acting Wing Cmdr. RAYMOND FRANK COURTIN, M.R.C.S., R.A.F.O.

Temp. Major ALICE COX, M.D., W.A.A.S. (attached S.A.M.C.).

Fl. Lieut. DAVID CRICHTON, M.B., Ch.B., R.A.F.V.R.

Temp. Surg. Lieut. JOSEPH IRWIN CUNNINGHAM, M.B., B.Ch., R.N.V.R.

Major (Temp. Lieut.-Col.) JOHN FINDLAY DAVIDSON, S.A.M.C., attached Union Defence Force Repatriation Unit

Capt. (Temp.) FRANCIS EDWIN DIAS, I.A.M.C.

Acting Surg. Lieut.-Cmdr. WILLIAM CHOWN STRAUS FIELDS, R.C.N.V.R.
Capt. ROBERT ERSKINE GLEN, M.B., Ch.B., R.A.M.C.
Lieut.-Col. (Temp.) SYDNEY HAYDN HEARD, M.R.C.S., I.A.M.C.
Major (Temp.) JOAN KATHERINE SOMERVILLE INCE, M.R.C.S., R.A.M.C.
Surg. Lieut.-Cmdr. GAETAN JARRY, R.C.N.V.R.
Major FREDERICK CYRIL JENNINGS, M.D., R.C.A.M.C.
Major CHARLES JOSEPH MACDONALD, R.C.A.M.C.
Major HUGH MACDONALD, R.C.A.M.C.
Fl. Lieut. ROBERT WYATT MCDOWELL, M.B., B.Ch., R.A.F.V.R.
Acting Wing Cmdr. WILLIAM NEAL MACLAY, M.R.C.S., R.A.F.V.R.
Acting Surg. Lieut.-Cmdr. PAUL FRANK D'MELLOW, R.I.N.V.R.
Major BERNARD FRANCIS MILLER, M.D., R.C.A.M.C.
Fl. Lieut. CLARENCE REGINALD SLUMING, M.B., Ch.B., D.R.C.O.G., R.A.F.V.R.
Acting Wing. Cmdr. DAVID STEVENSON, M.D., R.A.F.V.R.
Acting Squad. Ldr. TERENCE GEORGE WARD, L.R.C.P.&S.Ed., L.D.S., R.A.F.V.R.

M.B.E. (Civil Division)

Capt. NUSSERWANJI PIROZSHAH BILLIMORIA, M.B., B.S., Honorary Ophthalmic Surgeon, Indian Military General Hospital, Bombay.
JOHN AUSTEN PERCIVAL CAMERON, M.B., Ch.B., F.R.C.S., Colonial Medical Service. Medical Officer, Malaya. For services during internment.
NATHANIEL CRICHLOW, M.B., Ch.B., Colonial Medical Service. Medical Officer, British Solomon Islands Protectorate.
HUBERT CRAYDEN EDMUNDS, M.R.C.S., medical missionary, Hiranpur, Santal Parganas District, Bihar.
MRS. JEANIE GARDNER FOUGERE, M.B., Ch.B. For services to women's war organizations, Dominion of New Zealand.
PARESH CHANDRA GUHA, L.M.S., D.T.M. Civil Surgeon (retired), Assam.
Capt. ABDUR RAHMAN PESH IMAN, I.M.S. (I.A.M.C.), lately Subdivisional Health Officer, Feni, Bengal.
NOEL JAMES LINNINGTON MARGETSON, M.D., F.R.C.S.Ed. Medical Officer, District No. 1, and Medical Officer of Health, Montserrat, Leeward Islands.
ANANT KRISHNAJI NULKAR, L.M.S., Civil Medical Practitioner, Indian Miiitary Hospital, Poona.
DOUGLAS ALKINS SKAN, M.R.C.S., Colonial Medical Service. Pathologist, Nyasaland.
HUGH SMITH, M.B., Ch.B. For services during internment in Malaya.
Rai Bahadur RAM SWARUP SRIVASTAVA, M.B., Civil Surgeon (retired), Dehra Dun, United Provinces.
RAM LAL TULI, M.B., B.S., D.P.H., D.T.M. Deputy Director of Public Health (Temporary), Central Provinces and Berar.
Major CHARLES MARK ERNEST WARNER, M.R.C.S. Port Health Officer, Calcutta.
WILLIAM DE WEEVER WISHART, M.B., C.M. Municipal Health Officer, British Guiana.

Hon. M.B.E. (Civil Division)

MUNIR KHALIL MISHALANY, M.D. Assistant Senior Medical Officer, Palestine.

Kaisar-i-Hind Gold Medal

JAMES WILLIAM BOTTOMS, M.B., B.S., medical missionary, Baptist Mission Hospital, Chandraghona, Chittagong Hill Tracts, Bengal.
MADELINE ROSA SHEARBURN, M.B., B.S., doctor-in-charge, Zenana Mission Hospital, Tank, N.W.F.P.

In the New Year Honours List, published on Jan. 1, Prof. A. V. Hill, Sc.D., F.R.S., one of the secretaries of the Royal Society, was appointed a Member of the Order of the Companions of Honour. Major-Gen. A. B. Austin, late the Army Dental Corps, Honorary Dental Surgeon to the King, was appointed C.B.; and James Gray, Sc.D., LL.D., F.R.S., professor of zoology in the University of Cambridge, and Prof. H. D. Kay, D.Sc., F.R.S., director of the National Institute for Research in Dairying, University of Reading, both received the C.B.E.

The King, on the recommendation of the Secretary of State for Scotland, has approved the appointment of John Jardine, O.B.E., M.D., F.R.C.S.Ed., to be chairman of the General Board of Control for Scotland in succession to Sir John Jeffrey, K.C.B., who retired on Dec. 31. Dr. Jardine has been a commissioner in the Board since October, 1939, holding the post of principal assistant secretary in the Scottish Education Department. Sir John Jeffrey has had a long association with public health and poor-law administration in Scotland, becoming Secretary to the Department of Health for Scotland in 1929 and Permanent Under-Secretary of State for Scotland in 1933. On the reconstitution of the General Board of Control in 1939 he agreed to undertake for a period the office of chairman.

Reports of Societies

ABDOMINAL INCISIONS

At a meeting of the Section of Surgery of the Royal Society of Medicine on Jan. 2, with Mr. E. F. FINCH in the chair, a discussion on abdominal incisions was opened by Major-Gen. W. H. OGILVIE, who was warmly congratulated by the president, speaking on behalf of the Section, on the announcement made on the previous day that the King had conferred on him the honour of knighthood.

Major-Gen. Ogilvie said that the making of abdominal incisions was a subject which it was well to bring into open debate from time to time, although he knew too much about himself and his fellow-surgeons to expect that discussion would change their views to any great extent. Most surgeons regarded their own particular form of incision in the same way as they regarded their motor-car or fountain-pen—when they had one that suited them they stuck to it although there might be better ones on the market. Their discussion should be confined to methods of approach to organs which lay inside the peritoneal cavity and incisions through the abdominal wall in the ordinary sense. The purpose of an abdominal incision was to give access to the part to be attacked and room for the required job to be done. It should be reasonably extensible and should interfere as little as possible with the function of the abdominal wall and leave it as strong as it was before. While extensibility was demanded, they were not asking for an incision which would cover any wildly wrong diagnosis, but only one which would allow a reasonable latitude in scope. The first essential of an incision was that it should be rightly placed; the second, that it should be large enough to admit the surgeon's hands and the ordinary tools of his craft. Fagge uttered a true aphorism when he said, "Always make your incision twice as long as you think it ought to be, and then you will not have to enlarge it much."

Before opening the abdomen at all the surgeon must ask himself what he was proposing to do and what else he might possibly be forced to do. He must have some idea of what organ he proposed to attack or at least in which compartment of the abdomen he was going to perform. He could extend the standard incision to a length of 12 in. (30 cm.) or more without gross structural damage, but it was seldom right that he should do so. The difficulty arose most acutely in operations for abdominal emergencies. An incision correctly planned for acute appendicitis could be extended to cope with an appendix which was gangrenous, but could not be enlarged with impunity to deal with a duodenal perforation, an inflamed gall-bladder, a gangrenous pancreas, or a ruptured ectopic gestation. While the standard incisions could be—though they seldom should be—extended, there were inextensible incisions, such as those much above the umbilicus, cramped by the narrow epigastric angle. Another criterion of a good incision was that it should do the least possible harm to the abdominal wall itself, the structures under it, and the patient. In making an incision the possibility of adhesions to the deeper surface of the abdominal wall must be taken into account. Fixation of the already fixed did not matter, it was only fixation of the mobile which caused symptoms; thus adhesions to the colon or liver were relatively harmless, but those involving the small intestine might be harmful or even dangerous.

Foremost among the incisions to which unqualified support could be given were the lateral incisions, which were steadily increasing in popularity. They gave excellent access to any structure lying on the same side between the pylorus and the pubis. Within the last two years they had in his practice largely ousted the lower paramedian and median incisions for nearly all purposes. He was tending to abandon all incisions which involved the separation of planes and the retraction of layers. Concerning closure, repair was the function of the tissues, and stitches did no more than bring them into apposition and hold them there. There was no key layer in the abdominal cavity; all must be taken into account and all must heal equally well. In lateral incisions three layers of suture were required; in median and paramedian, one layer only was closed above the peritoneum, and here, therefore, the unsupported suture was not enough; it should be interrupted, or, if continuous, supported

by mattress sutures of unabsorbable material. As for poor incisions, he mentioned with disapproval "trans-rectus" incisions, and in particular Battle's incision.

Adequate Access and Firm Scarring

Mr. DIGBY CHAMBERLAIN said that three things had to be borne in mind when making an abdominal incision: adequate access to the structure to be operated on; the leaving of a firm scar after healing; and (a minor consideration) a cosmetic result. Concerning incisional hernia and burst abdomen, he referred to a paper by E. S. J. King, of Melbourne, in the *British Journal of Surgery* (1935, **23**, 35), in which he expressed the opinion that such hernias started by the cutting out of the peritoneal stitches or the escape of a tag of omentum between them. As for the size of the incision, it had been said that if one was in a strange country and required an abdominal operation one should ask which surgeon made the biggest incision and go to him. Inadequate incisions might mean that diseases in the abdomen which were unsuspected were missed. Every abdominal exploration should allow the surgeon to pass in review quickly the important organs inside the abdomen. The firmness of the scar depended largely on the suturing of the peritoneum. Adequate suturing of that layer would prevent the incidence of post-operative hernia or burst abdomen, and such suturing was as much dependent on the anaesthetist as on the surgeon. In making an abdominal incision nerves should be avoided, and muscles were better displaced than divided. As a standard incision he used the paramedian in operations for the stomach and duodenum. Paramedian incisions were perfectly adequate for colon work. For operations on the biliary tract he used a right paramedian incision almost exclusively. In closing the abdomen he used a continuous catgut stitch for the peritoneum, and if it was thin he took a small piece of the under-surface of the rectus muscle with each stitch in order to reinforce it. He added that abdominal incisions on the whole were not a matter of very great interest to surgeons, who only too often left it to their assistants to close the abdomen, but, however much was left to the assistant, he considered that the surgeon should close at least the peritoneum in view of the importance of that step in relation to incisional hernia.

Prof. JOHN BEATTIE made some general observations on the metabolic disturbances which followed the infliction of a surgical wound and on the physiology of healing. He stressed in particular the need for a high protein intake, and also pointed out the function of cortin in promoting repair in cases of injury and the high vitamin C requirements in view of the increased production of cortin.

The PRESIDENT referred to the firmly rooted idea among students that an incision began to heal at one end and the process of healing continued gradually towards the other end, so that they had a prejudice against a long incision, which they thought took a longer time to heal. He also asked for an opinion about stab-draining of the abdomen.

Mr. RODNEY MAINGOT said that he had been brought up on vertical incisions, he was taught median and paramedian incisions, and gradually, lately, he had been going more oblique. The transverse incision had the disadvantages that it took a long time to make, was very bloody, and left a weak abdominal wall, so that hernia was prone to arise afterwards.

For and Against Battle

Sir CLAUDE FRANKAU said that thirty years ago he was a convinced "muscle-splitter," but very soon he abandoned the practice. Contrary to General Ogilvie, in certain conditions he supported Battle's incision. It was the only adequate and proper incision for an appendix about which one was sure. It gave perfectly good access, no nerve was injured, and no weak spot was obtained if care was taken to drain at the upper end. Lord Moynihan once spoke of the mercifulness of the long incision. Arising out of that was the great desirability that the incision should be such that heavy retraction was not wanted afterwards. The worst thing for the patient in any abdominal operation was for the surgeon to be required to use any form of heavy retraction; it should be as light as possible.

Mr. W. E. TANNER said that when he was a house-surgeon he watched Arbuthnot Lane perform his operations. When operating for a bad peritonitis he did not close the peritoneum at all. He put a tube right along the wound and closed up the other layers. His idea was that paralytic ileus or dilatation of the stomach in these cases was caused by distension in the abdomen. He was bound to say that he saw some of these cases heal perfectly.

Mr. HAROLD DODD said that a very good incision for the appendix, which would deal also with the ruptured ectopic, and which was coming into greater use, was the Rutherford Morison iliac incision, often described by Prof. Grey Turner. The gridiron incision was attractive but difficult. He had given up midline incisions on account of the likelihood of hernia. He emphasized the importance of careful protection of the wound edges if first-class healing and freedom from burst abdomen or incisional hernia were desired.

In some further discussion Battle's incision was condemned and defended. One speaker said that as a house-surgeon he had two surgeons above him, one of whom practised Battle's and the other the gridiron, and as a consequence of the results he saw he would never use the former. The gridiron found more advocates than critics. Mr. SOLLY COHEN said he had never seen an obstruction after a gridiron incision, and he believed that Surg. Rear-Adm. Gordon-Taylor once stated that he had never had to open an abdomen for obstruction following that incision. A registrar, Mr. MUNRO, urged the value of a short incision in certain cases, and expressed himself rather surprised at the tendency to long incisions by his seniors.

General OGILVIE, in reply, said that it was undoubtedly the right thing not to use the main incision for drainage, but to make a separate stab. He protested against some of the eccentric incisions—"alphabetical incisions" they had been called in the course of the discussion because a number of letters of the alphabet appeared to be imitated—which were published in certain literature, particularly American. They belonged, he said, rather to the tradition of Heath Robinson than to that of John Hunter. With good anaesthesia, especially with field block of the abdominal wall, he thought that everything desired could be got out of the median incision, and he had had no misfortunes with it. It was true that one was dealing with only one layer, but with a tremendously strong layer which could be sutured with the utmost security. He thought that the controversy over Battle's incision should be left where it was.

Mr. CHAMBERLAIN, also in reply, said that one speaker had mentioned Lane's practice of suturing the abdomen and leaving the peritoneum unsutured. He could not subscribe to that procedure, and he hoped that no one in that company was now in favour of it.

Correspondence

R.M.B.F. Christmas Gifts

SIR,—It is with great pleasure that I can now announce that the Christmas Gifts appeal which I launched through your columns has reached the magnificent total of £2,127—a new record. In view of the high prices and the scarcity of the amenities of life I asked my colleagues for £2,000, a sum which, in view of last year's record, I scarcely dared to hope would be achieved, but which has actually been passed by a handsome margin. This means that all our beneficiaries are receiving £4 as a Christmas gift, and there is enough over to give some of the poorest £2 for the New Year.

My committee and I are deeply conscious of the great help afforded by the medical press in supporting and giving publicity to this appeal, and to you and your colleagues of the press as well as to all the generous contributors in the profession we tender our most cordial and grateful thanks.—I am, etc.,

ARNOLD LAWSON,
President, Royal Medical Benevolent Fund.

Putney, S.W.15.

A Fundamental Principle

SIR,—On reading Prof. J. A. Ryle's letter (Dec. 29, 1945, p. 936) I was amazed and distressed to find one of the leaders of our profession advocating "some measure of direction" of

doctors. Conversation with many doctors in this industrial region has convinced me that we are against any direction, to a man. Most of us joined the profession with the idea of working freely where we liked, and in whatever branch we liked. We did not then think of national socialism, totalitarian methods, direction, and control. If our freedom is going to be taken away, some of us are seriously and regretfully considering the question of giving up what has been our life's work, and finding some other occupation in more congenial circumstances and surroundings.

It is strange that having passed through the war with the slogan of "freedom" in the forefront, individual effort, enterprise, and freedom are now regarded as evil things by the powers that be. It will be a bad day for the patients when doctors are directed where they shall work, what work they shall do, and how they shall do it.

Prof. Ryle speaks from the security and altitude of a professorial chair at Oxford. Is he himself willing to be directed as to "the form, place, and type of work" he is to do? Is he willing, if "the under-privileged and under-doctored sections of the community" require his services, to be directed to work as a panel doctor, or a physician, in Rotherham or, say, Barnsley? Is not the truth of the matter that Prof. Ryle pictures himself under a State medical service directing others, but not being directed himself?—I am, etc.,

Rotherham. ERIC COLDREY.

SIR,—Prof. Ryle regards the present distribution of medical man-power as unfair. Presumably he means unfair to the general public and not to the medical profession. But all sorts of things are unfair to the general public—for example, the distribution of diamonds, Rolls Royce motor-cars, fur coats, caviare, smoked salmon, and country estates. All the world knows that the problem of socializing the medical services is one of the simplest, because the capital value of the profession is relatively small; whereas to nationalize the patent-medicine industries would upset all kinds of vested interests.

The scarcity of medical men in the pre-war distressed areas was caused by the local population being unable to remunerate the profession sufficiently well to attract doctors and by the local authorities being unwilling to provide efficient medical services out of local funds. Doctors who might have been tempted to work voluntarily in these areas preferred to join the medical missionary societies.

It seems to me that if such facilities as health centres and modern hospitals are first provided in these areas, and if doctors are offered reasonable salaries, sufficient medical personnel will migrate voluntarily to these parts of the country, for there they are sure to find excellent clinical material. Whereas Prof. Ryle wants direction of medical personnel, I ask for efficiency and modern facilities, and maintain that the power of direction not only is unnecessary but is an indication of incompetent administration.—I am, etc.,

London, W.1. WILFRED SHAW.

SIR,—Your footnote to Prof. J. A. Ryle's letter underlines also the statement of the Negotiating Committee that the problem of maldistribution exists. This must have annual results of ill-health, incapacity, and mortality in the big manufacturing areas of Britain which are of great importance for the immediate future if our economic position is to be stabilized. These insanitary areas are as much a part of our national inheritance as the tradition of liberty. Our profession has a duty not only to each individual patient and doctor but to the nation as a whole, and this duty is, out of present resources to give a distributed medical service at the earliest possible moment. If we leave the complete and efficient medical care of the industrial populations as the responsibility of the next generation of doctors, which is what the Negotiating Committee and your footnote suggest, millions of employees and their families will have, for the next seven years or so, medical attention which is admitted to be unsatisfactory.

This is a perpetuation of the pre-war mentality which handed on responsibility for rearmament from Government to Government, and if we believe medical treatment is any use at all I do not see how we can tolerate it. We could not reject the heritage of Governmental inefficiency when war came in 1939, and we cannot safely reject it in peace. If we object to Governmental direction we must direct ourselves. The Negotiating Committee should aim at immediate terms of service which should make it very well worth while for the best men to move to the Black Country or elsewhere, and should appeal for volunteers in an intensive campaign, so that this generation faces the problem. There seem four reasons why medical men do not move where they are most needed, three justifiable—children, health, finance. The commonest, least important, and most powerful—disinclination—it is the collective responsibility of the profession to overcome, and we, like the Government, will be judged by our collective efficiency. If we fail we cannot blame the Government for attempting direction.—I am, etc.,

Hove. WILLIAM BOURNE.

Increasing the Number of Doctors

SIR,—In your note appended to Prof. J. A. Ryle's letter (Dec. 29, p. 936) on the question of direction of medical men you say that the proper solution of the problem of distribution of doctors is an increase in their number. I am sure that Prof. Ryle would agree that such an increase is urgently needed if the public is to get the service it needs, though it may not follow that this will abolish the uneven distribution of medical man-power without the Government retaining some such power of direction as is suggested in Dr. A. G. Winter's proposal (p. 936).

So far, however, there has been little evidence to indicate that the Government is particularly concerned with increasing the number of practising medical men and women. I understand that the proposal of the Goodenough Committee that all the London medical schools should accept a quota of women students is now being implemented. The effect of this will be to reduce the numbers of men accepted by such schools until such time as the accommodation for students can be materially increased. The immediate effect of the adoption of such a policy must be to decrease the number of practising doctors, as there is a well-known wastage of women through marriage and other domestic causes. It is a fair estimate to assume that some 30% of the women admitted under the new proposals will not be practising five to ten years after qualification, and the present shortage will be accentuated until the schools have enlarged their capacity. The only proposal for such enlargement which seems likely to materialize in the immediate future is the removal of Charing Cross and St. George's Hospitals to surburban sites. These two schools at present admit some 70 students annually, and this number should be increased to about 200 when their new hospitals have been built and equipped. This means that accommodation for an additional 130 students will ultimately become available, and a recent announcement in the Press suggests that the new St. George's Hospital may be ready in five years' time—possibly a rather optimistic estimate. In the meantime nine schools which at present do not admit women are to take a quota of women students. I do not know what numbers of women are to be accepted by these schools, but the average will not be more than fifteen if the number of men admitted is to be maintained at its present level. Should the average number of women admitted to these nine schools be over fifteen there is still likely to be a gross reduction of male students, and hence, allowing for the inevitable wastage of the qualified women, a total reduction in the number of practising doctors emerging from the London schools.

I have left out of account the 70 women students at present being trained at this school. If the further proposal of the Goodenough Committee that this school should be abolished is also carried into effect the prospects for increasing the number of doctors will recede even further into the distance.—I am, etc.,

West London Hospital Medical School, Hammersmith, W.6. MAURICE SHAW.

Principle III

SIR,—I was glad to see that Sir Ernest Graham-Little (Dec. 29, 1945, p. 936) had drawn attention to the probability that the citizen will be unable to pay both a compulsory levy and a private fee, and so the independent doctor will disappear. I had, however, assumed that the Negotiating Committee, by stating Principle III, intended to see to it that private practice

was efficiently safeguarded. This necessity has been emphasized over and over again at our Representative Meetings. Nevertheless, it may be that many of our profession are not aware of the Belfast resolution (an amended version of one by Perth), which was carried by a large majority at the last Annual Representative Meeting. I therefore ask you to allow me to repeat this resolution:

> "That in any National Health Service (1) all persons compulsorily insured should have the right to opt out from the Government service in matters of medical advice and treatment and receive a financial grant towards a private contract, and that no agreements be entered into which do not effectively safeguard this right; (2) insured patients should be in a position to assign to the hospital or nursing home of their choice any financial grant received through their health insurance authority."

Unless such a state of affairs is secured, to me our fight for freedom will have been in vain.—I am, etc.,

Dorking. CYRIL E. BEARE.

The Colonial Medical Service

SIR,—Your restrained leading article (Nov. 17, p. 693) will be welcomed by many members of that "nebulous organization"—the Colonial Medical Service. I feel that you might have added that many of the defects of the service should not be laid at the door of its members, but are the direct result of the Colonial system of administration plus lack of funds.

You do not mention salary and pension conditions. The newly qualified man is attracted by the rather mendacious advertisement offering him £600 p.a. or more, private practice, and opportunity for specialization. When, after a few years, he realizes that he will be over 40 before attaining £1,000 p.a., that most stations offer no private practice, and that he will not be granted study leave to qualify for one of the few specialist posts, it is usually too late. If he is single or has been very lucky with private practice he can get out, with a small gratuity if he has done ten years. Otherwise he remains.

I will not comment upon your suggestions for a central directorate. Specialist appointments are being promised, but who will take them at a flat rate of £1,300 p.a.? Remember that specialists rarely qualify for high administrative posts. More frequent transfers from one Colony to another are certainly desirable. At present such a transfer is too often "an Irishman's rise." More desirable still is a reduced frequency of transfer from one station to another, which often happens several times in one tour. (I do not refer to officers on specific travelling jobs.) The abolition of private practice is long overdue. It creates endless jealousy and intrigue. But one is promised £150 p.a. staff pay when disallowed private practice. Will the Colonies give us £600 p.a. (or more) plus this £150? Many would be glad of the offer.

On joining the service salary should not be at a fixed rate for everyone. It should be graded according to length of qualification and possession of special qualification. Promotion should then be on merit, not largely on seniority alone. Your suggestions for short-service commissions as in the Forces, and for house appointments, are good. Technical officers labour under some unnecessary burdens designed for other needs. For example, even a highly experienced medical man is put on probation, without increments, for three years. The raw administrative cadet, who must, of course, be on probation while learning his job, is given relatively large increments in his early years. Soon after reaching 40 his salary is equal to that of the M.O. Again, the language examination should not be compulsory in all posts—e.g., for laboratory workers or where the local language is unspeakable or a maze of dialects.

Pensions are quite inadequate. On the new, 1936, conditions one must serve at least 25 years and reach a fairly high administrative post to acquire the annual pension formerly attained by a plain M.O. after 20 years: this with a steadily rising cost of living both at home and in the Tropics.

Many good men are now leaving the Colonial Service, and recent, mostly wartime, recruits are far from happy. Something will have to be done. Can the Colonial system rise to it? For obvious reasons I sign myself

"WEST COAST."

Post-haemorrhagic Blindness

SIR,—Dr. James Black's interesting description of an example of blindness following haematemesis encourages me to offer some observations upon this happily rare complication, which naturally concerns the general physician however inadequate his ophthalmological approach.

My own experience is limited to two examples which, with that impish propensity of coincidences to enliven our matter-of-fact routine, occurred in the same week. My oculist colleague was, of course, quite familiar with this association of which I was then completely ignorant, but I did not find the references to the literature particularly instructive. I learnt, however, that Pergens had traced 50 cases, in 86% of which the blindness was permanent, and that males predominated. Incidentally both mine were in middle-aged females. It is clear that haemorrhage *qua* haemorrhage is not the responsible factor—one excludes the temporary loss of sight that is consequent upon retinal anaemia—otherwise examples would certainly be forthcoming from military surgeons. The majority—possibly all—result from haemorrhage from the stomach or uterus, a circumstance which has led to a number of explanations, some of which have been examined by Dr. Black. The latent period is in itself puzzling: Dr. Black mentions from 12 hours to 18 days and longer after the initial haemorrhage; in my examples the interval was 16 days and 22 days respectively. Another circumstance which would appear to exclude a general cause is the occasional unilateral limitation. If toxaemia is responsible, what sort of toxin with such specificity could be indicted? Anoxaemia has been invoked to bring the condition into line with quinine amaurosis. I recollect an article on this aspect some years ago, but regret I have no note that permits an exact reference. I recollect also another article—again I cannot particularize further—in which an explanation was advanced in regard to the viscera.

This trivial contribution adds little to the elucidation of the problem, but I hope it may stimulate opinions from others more experienced.—I am, etc.,

London, W.1. ADOLPHE ABRAHAMS.

Galvanic Stimulation of Denervated Muscle

SIR,—In order to avoid undue protraction of this correspondence we are selecting the four points from Dr. R. G. Abercrombie's last letter (Dec. 22, 1945, p. 898) which cannot be allowed to pass unchallenged.

(1) The use of Tinel's sign as an index of nerve regeneration.—If a prize were to be offered for the unreliability of any particular sign of regeneration, then Tinel's would win by a big margin. It may be absent when, from other evidence, regeneration is known to be progressing satisfactorily; it may even regress for no apparent reason. Functional recovery may fail in the presence of a strongly positive and persistent Tinel. Arguments based solely on its behaviour are worthless.

(2) Facial palsy.—How does Dr. Abercrombie assess recovery quantitatively? It is difficult enough in limb muscles; it must be nearly impossible in the facial. Has he considered the possibility in his cases of recovery not being due until about the time when he first observed the "apparent acceleration"? The coincidence of improvement with the cessation of galvanic treatment may have been attributable simply to the functional maturation of the regenerating axons occurring during the period when the patient happened to be receiving no treatment.

(3) Evil effects of galvanism resulting from ionization.—Radiant energy and electrotherapy can burn a patient; valuable drugs can poison him. Our paper was addressed only to those who know how to use galvanism; and surely three minutes' treatment daily to individual muscles can scarcely be termed "long-continued" or "exceptionally intensive." Nervousness about ionization may be allayed by the use of the excellent buffer solution recommended by Holbourn and Guttmann: the stock solution contains 25 g. of Na_2HPO_4 and 12 g. of NaH_2PO_4 in one litre of tap water, diluted as required with 5 to 10 times its volume of tap water.

(4) Contractures.—Dr. Abercrombie is unfortunately correct in believing that most clinicians hold the view that under ordinary circumstances denervated muscle does not undergo

contracture. This erroneous belief is responsible for the not inconsiderable and sometimes permanent disability that has occurred in hundreds of cases of nerve injury during the last six years. Admittedly contracture of denervated muscle is not invariable, and it can be greatly aggravated by injudicious splinting; but it will occur in the unsplinted hand if movement of the paralysed part is neglected. In the many cases that we have seen the contractures developed before and not after the institution of galvanism. Furthermore, they have been seen in cases which have had no such treatment at any time. In the untreated muscle fibrosis is rapid, in the treated muscle it is not; and fibrous tissue contracts.—We are, etc.,

E. C. S. JACKSON.
R. E. M. BOWDEN.
Wingfield-Morris Orthopaedic Hospital, Oxford. H. J. SEDDON.

Nylon for Buried Sutures

SIR,—I was pleased to read in Mr. T. Russell Stevens's letter (Dec. 22, p. 901) that his experience with nylon for buried sutures supports my claims for it. I have continued to employ it for the great majority of my cases in the past twelve months, using catgut only occasionally for the purpose of comparison, except in bladder and stomach operations where it is usually employed. As a result of these comparisons I remain convinced that catgut results in greater inflammation, induration, and pain, and in a higher incidence of wound sepsis and breakdown. This is not attributed to any fault in the manufacture of the catgut but to its property, as an animal material, of provoking the inflammatory reaction necessary for its absorption.

In the last twelve months I have seen, and heard of, an unusually large number of burst abdominal wounds in cases in which catgut was used. The surgeons in all cases were men of much experience and technical skill. In those disruptions which I saw the catgut (20-day) had been almost completely digested even as early as four or five days after operation. Most of the wounds showed no macroscopical evidence of infection. It seems from this that in an assessment of the wartime catgut the rate of absorption in the body is a factor even more important than variations in size and strength—a point insufficiently stressed in the recent correspondence on this subject.

In the matter of knot-tying I feel I must point out to Mr. Stevens that there is no question of changing hands in tying the knot which I described in my article (Jan. 6, 1945, p. 12). The short end is held in one hand, usually the left, throughout, and all half-knots are tied with that hand. The question of which way the knots slide is determined purely by the relative tensions on the two ends when the half-knots are being tightened. With equal tension a flat knot is obtained, while unequal tension will always result in a sliding knot. If the same end is held taut throughout, as Mr. Stevens suggests, all the half-knots slide on the taut end, and the result is a knot which will slip relatively easily, especially with a smooth material such as nylon, even with four or five half-knots. If the tension is changed so that the third half-knot slides down the short end it acts as a lock, and the knot is secure except when thicknesses of nylon greater than 5 N are used, when the addition of a fourth half-knot is advisable. An alternative is the reef-knot with the addition of a third flat half-knot. This holds well, but the tension of the ligature or suture cannot be adjusted with the same delicacy as with the running-and-lock knot.—I am, etc.,

Manchester. HERBERT A. HAXTON.

Surgical Catgut

SIR,—Mr. John Hosford's letter (Nov. 10, 1945, p. 668) stated conditions experienced by myself and my surgical colleagues.

There is another aspect of present-day surgical catgut to which I wish to draw attention, and that is its untrustworthiness in use. Like most surgeons I occasionally had a ruptured wound pre-war; it was usually associated with a distended abdomen and a bad chest; it happened possibly once or twice a year. Wartime Michel clips and synthetic silkworm increased these cases and clean wounds began to come apart. In these cases I blamed myself for technical carelessness until six months ago when two abdominal hysterectomies, uncomplicated by either infection or chest complications, opened out completely (with the exception of two tension sutures), one 48 hours and the other 72 hours after operation. While performing secondary suture the extraordinary feature was the complete absence of catgut; the wound had been sutured in layers with No. 1 (a stout variety) 20-day chromicized catgut. The makers investigated my complaint and proved to their own satisfaction, although not to mine, that this extraordinary rate of disappearance was due to a technical error on the part of the theatre sister. Subsequently we carried out their directions meticulously, but in addition I used deep-tension sutures of thick silk for all my abdominal wounds and continuous nylon for the skin. During the intervening six months our troubles have been definite but small, but during the last month they have been catastrophic.

Two days after a colleague had sutured a perforated duodenal ulcer the patient started vomiting and the wound was bulging, the condition became a frank intestinal obstruction, and when the wound was opened up later the same day the whole of the deeper layers had given way. Two weeks afterwards a perforation of my own had what I thought was acute dilatation of the stomach but responded to an indwelling Ryle's tube and intravenous saline. The sutures were removed on the tenth day. That night the patient coughed and felt the wound give; two coils of dilated small gut extruded; they had obviously been adherent to the wound and the cause of his early vomiting. In another case I transplanted a solitary ureter into the colon for tuberculous cystitis, leaving a small drain in the lower angle of the abdominal wound: this was removed after 48 hours, and the following day gut could be seen through the opening. At exploration the whole of the deeper layers of the wound had given way and no catgut whatsoever was visible. This case had had a previous laparotomy a few weeks earlier and the wound had healed by first intention and no adhesions were present.

A second-stage right hemicolectomy had a troublesome convalescence; when the stitches were removed on the 10th day the skin edges gaped, and on the 14th day I performed a secondary suture, when I discovered, to my amazement, that what I had taken to be a muscle basis was densely adherent small gut so affected that I had to do an excision and end-to-end anastomosis. A week ago I excised the protruding portion of rectum for a considerable prolapse in a child. I left my sutures long beyond the last knot, three strands of No. 1 20-day chromicized catgut; all three strands had come away next morning. A few days ago I saw a man upon whom I had performed a choledochotomy; he was over 16 st. (102 kg.), and made an uneventful convalescence without cough or wound suppuration. Owing to his size and the persistent biliary drainage he remained in bed about five weeks. Now, eight weeks from operation, he has an enormous ventral hernia which threatens to burst the skin.

Over many years I have made an invariable practice of using 20-day chromicized catgut, and it is an extraordinary feature that any firm should market a product which even occasionally disintegrates in a wound in 24 hours.—I am, etc.,

Halifax General Hospital. H. I. DEITCH, M.S., F.R.C.S.

SIR,—I have no wish to enter into any acrimonious correspondence on the subject of catgut. One of the main difficulties of any surgeon is to find out the true facts of the situation, and if this discussion brings them to light I feel that I shall have done a service.

Sir Weldon Dalrymple-Champneys (Dec. 29, p. 937) says he is in a position to contradict several statements that I made, yet curiously enough his statements are at variance with certain statements made in a brochure issued by the Ligature Department of the London Hospital, which states that "the intestines used for sterile surgical catgut at the London Hospital are from New Zealand milk lambs"; yet he states that it is untrue when I say that the material for making catgut is imported. I was also informed by a representative of a catgut firm that they were not allowed to use mercuric salts in surgical catgut. This again is entirely at variance with the brochure referred to above. When one finds such contradictory statements what is one to believe?

I would suggest that the real test would be to make available supplies of Davis and Geck's catgut, at a price comparable to the English catgut, and see which surgeons prefer. The diffi-

culty in any controversy of this nature is that political and commercial interests are apt to affect the scientific atmosphere.—I am, etc.,

Hove. H. J. MCCURRICH.

The Child with Frequent Colds

SIR,—We were interested to read the letters commenting on our article. We do not feel that there is any controversy with Dr. F. M. Mallinson (Nov. 10, 1945, p. 667), who stresses the importance of the infective factor in the environment. It is apparent that the majority of the cases seen by us fall into the group whose infection is derived from contact at school, but we entirely agree with Dr. Mallinson on the importance of the family as a source of infection. A comprehensive examination of the affected individual should, however, precede the extension of the investigation to the family. We doubt whether detailed investigations of the children's home conditions would give us greater knowledge of the social background of these children than is already known from social surveys done on various classes of the population. Such extensive studies would have been difficult and possibly misleading under war conditions. We did not extend our investigations to a larger number of children as we did not feel that there would be significant differences in the results.

Dr. Anne Greig (Nov. 17, p. 703) should not assume that we regarded the anaemia as being "more or less" unimportant. The anaemia affecting a number of the children was of the microcytic type, and our mean haemoglobin levels corresponded to those obtained in large numbers of school-children during 1944 in London and Edinburgh. They corresponded, therefore, to those found in the general school population, and we did not think that the anaemia was evidence of some defect connected with the frequent colds. The colds were not more frequent in the anaemic children, nor was the positive Mantoux test related to the degree of anaemia. Dr. Greig is justified in her suggestion that conditions in other parts of the country might have given rise to different conclusions, and it would be interesting to compare studies done in Glasgow with the one we have completed. We doubt whether the differences would be very great.

Some correspondents mentioned the importance of excess of carbohydrate in the diet, and some stressed the nervous factor and "coddling" of these children, without giving any evidence to substantiate these theories. Many parents were very worried about the frequent colds and accepted our reassurance and advice with gratitude. We do not think the parents would share the view of your correspondent who accused us of treating these children like "cases."

Our conclusions are based on the results of clinical and laboratory investigations, and we did not concern ourselves with the treatment of this condition. We should be interested to hear whether other workers on this problem have discovered constant abnormalities or defects affecting the catarrhal child. There is certainly room for much further study on this interesting and prevalent condition.—We are, etc.,

D. H. IRWIN.
E. FRANKEL.

Essex County Hospital, Wanstead, E.11.

SIR,—The article on colds in school-children by Drs. Irwin and Frankel (Oct. 27, p. 566) omits all reference to one common and important cause—chalk dust. The use of chalk on a blackboard and its removal with a dry duster ensures that for a considerable part of each day children who sit near the board are breathing air impregnated with highly irritating particles of dust. Even the teachers are not immune from its effects, but certain children suffer so acutely as to present a typical picture.

The usual history is that the child enjoyed very good health until going to school and still keeps well during the longer holidays. Whilst at school, however, he gets cold after cold. No sooner does he recover from one, after a period of absence from school, than he returns to catch another. The clinical appearances are equally characteristic. There are, usually, some conjunctivitis and catarrhal otitis media, nasal congestion with a watery discharge, and a short dry cough without any sign of bronchitis. In short, they suggest an allergic reaction rather than an infective process. In one case I have found that during a prolonged absence from school only one cold occurred and that followed the use of a blackboard and crayons at home.

There is no doubt that chalk dust can and does produce these effects, and I am informed that there has been an increase in allergic respiratory disorders in Derbyshire as a result of increased quarrying during the war. It is rather a prosaic explanation to offer and will not satisfy those who explain all childhood's ills by the poverty, ignorance, and stupidity of the parents; but it does account for the facts, which are, generally, that these children suffer from colds, not when they are at home, but only during their attendance at school,—I am, etc.,

Urmston, Lancs. M. L. POSTON.

Abdominal Nerve Block

SIR,—In the *Journal* of Oct. 20, 1945 (p. 547), one notes with interest the technique advised by Lieut.-Col. F. R. W. Kinkead Allen for blocking the ilio-inguinal and ilio-hypogastric nerves. However, a simpler and surer method is that described by Farr (*Practical Local Anaesthesia*). The intracermal wheal is raised 2 cm. medial to the anterior superior spine. The needle is inserted perpendicularly backwards till it is felt to pierce the aponeurosis of the external oblique with a characteristic jerk. After the usual aspiration test, 30 c.cm. of 1% novocain (containing m 3 (0.18 c.cm.) of adrenaline) are injected without moving the needle. Both nerves are thus soaked as they lie beneath the aponeurosis, and anaesthesia results within five minutes.—I am, etc.,

Johannesburg. M. ARNOLD.

Spinal Analgesia in Operative Obstetrics

SIR,—The sad stories of the misadventures which have followed the use of spinal analgesia, recently published in the *Journal*, would appear to support my contention that this form of analgesia should be used only when positively indicated, and then only by those who have made a special study of the technique of administration.

No one can object to an experienced anaesthetist making use of any method at which he has become specially proficient, but the not uncommon practice of using spinal analgesia for straightforward uncomplicated cases, simply because of its convenience, can no longer be justified in view of such tragedies as have recently been reported.—I am, etc.,

New Barnet, Herts. JOHN ELAM.

Diagnostic Acumen of the G.P.

SIR,—In the Section of Surgery of the Royal Society of Medicine on Dec. 5 Mr. Ernest Finch, in his presidential address on the treatment of the cancer patient (reported in the *Journal* of Dec. 22, 1945, p. 894), spoke *inter alia* of the part played by the general practitioner in the diagnosis of early cases of cancer of the breast. He is reported as saying that "the student left his school with a definite picture of the final stages of cancer," and later that "when he [the practitioner] saw a lump in the breast with no fixity, no retraction of the nipple, and no palpable lymphatic nodes in the axilla, his training led him to think and say that it was chronic mastitis or some relatively innocent condition." If Mr. Finch is correct in his animadversions, one wonders, Sir, who these general practitioners might be who show such colossal ignorance of the rudiments of diagnosis, and, if they exist at all, surely their hospital training must have been defective in every way; and what of those (alleged) specialists, surgical and otherwise, who went through the tedious farce of teaching them? Statements like this from an eminent source call for further investigation.

For some years now the general practitioner, who at one time did 90% of the midwifery in this country and did it well, has been told, in season and out, that he is a careless and poorly equipped accoucheur, a positive danger to any lying-in woman, and should on no account attend a midwifery case. Another specialist—a urologist I believe—implored general practitioners not to pass a catheter on any account, no matter how great the patient's need for relief from acute retention, but to send for the urologist, whose methods presumably were far less septic than the general practitioner's. And now, the unkindest cut of

all, we are assured on the authority of Mr. Ernest Finch that we cannot even diagnose an early carcinoma of the breast!

No doubt the G.P. needs high flights of imaginative skill to reach such acumen in the realms of diagnosis, but he is, or must be a dull dog; and more, does anybody really believe him capable of properly writing out a panel certificate? Surely it is a waste of time and energy training a young man or woman to be an "ordinary doctor." Why not train them as specialists right away and save much time and trouble? The whole thing is preposterous, and if gentlemen like presidents of Sections must give addresses—and I suppose they must—then they should keep to their subject and avoid unfair criticism of the general practitioner, who is not the fool he is made out to be. If he is a fool at his work then it is time, and more, that the whole scheme of medical education was recast. Maybe those time-consuming hours wasted in learning the fleeting facts of physiology and the dryasdust bones that "present" for examination might be more profitably employed in learning to recognize the early as well as the final stages of disease.—I am, etc.,

Bournemouth. VINCENT NORMAN.

Penicillin by Intramuscular Drip

SIR,—The note by Dr. T. A. Grimson with reference to the intramuscular drip method of administering penicillin (Dec. 15, p. 849) brings up several relevant points. Most persons with much experience of using penicillin will agree that this method is that of choice, especially when administration is to be prolonged, as it is less painful and does not disturb sleep. It is felt that so simple a technique as that described needs full publicity, as no doubt, when supplies become more easily available, its use in general practice may well become of importance.

The total dosage for the twenty-four hours should be made up to a volume of half a pintt (280 c.cm.) only, as larger quantities tend to cause pain and boggy swelling around the needle site. The lateral aspect of the thigh is the site of election, and the institution of regular quadriceps exercises appears to facilitate absorption. Using the standard E.M.S. transfusion set, 8 drops a minute has been found to be the average rate of drip to allow for the half-pint to be run in during the twenty-four-hour period. A strip of plaster stuck down the side of the bottle with the appropriate times graduated upon it keeps a check on the rate of flow, and it has been found that most patients of any intelligence will help any shortage of nursing staff by watching their own drip and adjusting the screw-clip from time to time as required. A stainless-steel saline infusion needle with side perforation in addition to a terminal one, such as that of Souttar, which is 2½ in. (6.35 cm.) long and has an S.W.G. of 14, was found to be ideal as it exactly fits the connexion on the tubing of the transfusion set, is long enough to lie snugly and flat on the thigh, and is less liable to get blocked than a needle with only the terminal opening.

The presence of sepsis at the needle site, which is referred to in the *Lancet* (Dec. 22, p. 817), is very common, and there appears no certain method of preventing its occurrence, although fortunately the pus is usually sterile and any sepsis as a rule clears up completely in two or three days. It would seem that changing the needle site from one thigh to the other frequently (every two or three days) reduces the liability to this mishap, as it also reduces the tendency to any local pain or swelling.—I am, etc.,

Hatch End, Middlesex. MARTIN STRATFORD.

Treatment of Breast Abscess

SIR,—With reference to the very interesting letter of Dr. Annie Fulton on infective mastitis (Dec. 15, p. 862) may I add a note on treatment.

Of the 27 cases which came to my notice in January and February, 1944, 24 were in multiparous married women and three were in virgin unmarried nulliparae. Of the 24 multiparae all were seen in the first six weeks of the puerperium and were fortunately seen in the presuppurative stage of the infection. In 20 of the cases the infection was circumareolar. Three of the cases were interstitial and one retromammary. At this stage the breast on palpation presented a definite painful irregular mass. There was some slight temperature and pulse. The course of treatment was the same in all cases.

Stilboestrol medication was started to inhibit lactation, if any. Simultaneously the affected breast (or breasts) was irradiated with deep infra-red rays. Fifteen minutes under the rays night and morning was sufficient. The surface of the treated area looked now like mild sunburn. After three days of such treatment the breast was opened with a deep incision radiating from the nipple. Gas and oxygen were used as an anaesthetic. Frank white creamy pus was always evident after the three-days irradiation. The micro-organism was predominantly staphylococcus. Infra-red irradiation was started as before, and the incision healed from below upwards with healthy granulations, leaving a pink flexible scar, thus conserving the artistic and ornamental value of this organ. Three cases were pre-operatively treated with the sulpha drugs and poultices, but it took two days longer for fluctuation and abscess formation to occur, and at least ten days to heal, even with the application of urea crystals, leaving a contracted ugly scar. With the advent of penicillin deep infra-red irradiation, by causing a local hyperaemia, would bring more leucocytes to the site of infection, and a higher concentration of penicillin or the sulpha drugs if they were used. Abscess formation and fluctuation occurred more quickly by this method than with poultices and the sulpha drugs. Healing of the incision took place more readily, as there was a greater flood of fibrocytes, phagocytes, and healthy serum brought to the part.

More use could be made of infra-red rays for local infections elsewhere, and with the added aid of penicillin and the sulpha group of drugs local infections could be quickly and safely dealt with. All the above cases gave a successful and satisfactory result with this treatment.—I am, etc.,

Ryde. JOHN M. CAMPBELL.

Treatment of Amoebiasis

SIR,—I was very interested in a letter in your columns recently concerning amoebiasis among ex-prisoners of war from the Far East. As an ex-prisoner of war myself I can state that very many of these cases received no specific treatment whatsoever and some as little as 1 gr. (65 mg.) of emetine hydrochloride owing to the lack of drug supplies. I impressed on all my amoebic cases that they had not been cured, even though their symptoms had abated, and that they would require further investigation and treatment on return to the U.K.

It can be taken almost dogmatically that any diarrhoea, flatulence, or other mild gastro-intestinal disturbances occurring in repatriated prisoners of war from the Far East should be regarded as amoebiasis unless repeated examinations of the stools have proved negative. This is especially the case if there is any enlargement or tenderness of the liver, or if the caecum or sigmoid colon is palpable and tender.

Examinations of the stools can easily be carried out by the general practitioner, but I would like to emphasize that it is essential for success to have a fresh specimen. The stool should be passed at the consulting-rooms into a warmed bedpan. It will be remembered that to the naked eye the amoebic stool is bulky, foul-smelling, acid to litmus, and may contain blood and mucus. If a little of the mucus is now transferred on to a slide and mixed with equal parts of normal saline *E. histolytica* can be seen under low power as glistening refractile specks, and if these are examined under high power the contained R.B.C.s, movement of the pseudopodia, and the differentiated endoplasm and ectoplasm will identify the parasite. Cysts are less easy to identify and the stool should be sent to the pathologist, since in the case of cysts a fresh stool is not essential. The presence of *E. coli*, Charcot-Leyden crystals, or the spirochaete of Werner, or other similar motile organisms, should be viewed with grave suspicion. Sigmoidoscopy should be carried out in all cases before pronouncing the patient free from infection; the parasites may often be found in a smear taken directly in this way, or a typical flask-shaped ulcer with undermined edges may be seen even when no sign of disease is found on ordinary stool examinations.

Even when all findings are negative, if the symptoms persist without apparent cause a full course of specific treatment should be given. Relapse is extremely common among incompletely treated cases, and the combined treatment recommended by Manson-Bahr is in my experience most satisfactory. The patient should be kept strictly in bed; 1 gr. (65 mg.) of emetine hydrochloride subcutaneously each night should be given for 10 nights. Soda bicarb. gr. 30 (2 g.) daily by mouth enhances

the effect of the emetine. This should be accompanied or followed by emetine bismuth iodide 3 gr. (0.2 g.) nightly by mouth for 10 days. At the same time 8 oz. (240 c.cm.) of yatren retention enemata should be given daily. This should be followed by carbarsone 4 gr. (0.25 g.) twice daily for a fortnight. A short time after treatment the stools should again be examined and a sigmoid examination carried out as a test of cure. Might I plead that any investigation and treatment less than that outlined above is not doing full justice to the patient.—I am, etc.,

Glasgow. E. SNELL.

Shortage of Nurses

SIR,—Dr. T. R. Aynsley in his letter (Dec. 15, p. 865) on the shortage of nurses shows a lamentable ignorance of the industrial nurse's function when he writes of her "waiting for minor accidents preparatory to sending them to a hospital outpatient department." Primary treatment is but a small part of the industrial nurse's work, which is mainly preventive in character, and the nurse who has obtained her certificate in industrial nursing, which requires among other things a sound knowledge of social science, will justly resent Dr. Aynsley's criticism of her work. Does he think that nurses engaged in other branches of preventive medicine, such as health visiting, are also wasting their time?

Dr. Aynsley need not be unduly disturbed in mind, however, as nurses are not "directed" to industry, and it is only possible to "entice" nurses who are approved for the work by the Appointments Department of the Ministry of Labour. Such approval is given to only a few classes of nurses who are not subject to direction—e.g., married women with children or whose husbands are in the Forces abroad.

The number of trained nurses employed in industry is estimated at 5,000, which works out at about one trained nurse to each 3,000 persons employed. Nurses below the age of 27, other than a few special classes, have long since been directed to other spheres of work, so that the only trained nurses in industry who could be directed to hospital work are those with special qualifications and skill who are better employed where they are.—I am, etc.,

The Butterley Co., Ltd., Derby. G. F. KEATINGE.

Benjamin Rush's Death

SIR,—In "Nova et Vetera" (Dec. 22, 1945, p. 893) it is stated that Benjamin Rush's death "is alleged to have been hastened by injudicious bleeding." It is a pity that this old libel should have been even tentatively resurrected, for there is nothing in it. Rush was, of course, a violent advocate of bleeding. His "three tens" treatment for yellow fever—10 oz. (300 c.cm.) blood, 10 grains (650 mg.) of calomel, and 10 grains of jalap—is historical, was certainly ferocious, and probably cost a good many lives. But his own death actually was due to pleurisy; and the rumour from America that reached Lettsom in 1813 and started the story in England was stated by Dr. Mease, one of Rush's oldest friends, to have been circulated by his enemies to gratify "the little and mean spirits amongst us who exulted in the report of his having fallen a victim to the depleting system, and who will be glad to find the report has been circulated in Europe" (Pettigrew's *Lettsom*, vol. 3, p. 22). The whole story is retold in my *Lettsom* (London, 1933, p. 375) and in *Benjamin Rush* by N. G. Goodman (Philadelphia, 1934, p. 346).

It is curious that the same story should have been circulated about Lettsom's son, John Miers, whose death, according to gossip recorded by Farington in his *Diary* (vol. 1, p. 294), was said to have been caused by over-bleeding. This was equally fallacious and probably due to the same cause—jealousy.—I am, etc.,

London, W.1. J. JOHNSTON ABRAHAM.

Doctors Wanted for Boys' Clubs

SIR,—It is a regrettable gap in our health and social services that, while machinery is in being for periodic examination by qualified doctors of children of school age, none exists for the "vetting" of the adolescent boy or girl at work other than that provided by some enlightened industrialists.

For many years clubs affiliated to the London Federation of Boys' Clubs or its parent body, the National Association of Boys' Clubs, have done something to make good this deficiency by arranging for local doctors or senior medical students to "vet" their boys, to the great benefit of the health of the boys and the peace of mind of their leaders.

My own boys' club in Hoxton has for nearly twenty years now been fortunate enough to have the services, voluntarily given, of house-physicians or last-year students from a great teaching hospital in East London. Other clubs have not been so fortunate, and the purpose of this letter is to seek through your *Journal* the help of other doctors and students who may be able to spend a couple of evening hours weekly or fortnightly in a boys' club in some part of London. Though in the nature of a "busman's" holiday, there is enjoyment in such work, especially as time passes and "the Doc." becomes, like the managers, a part of the furniture of the club; the London boy requires no praise from me.

If any young physicians reading this feel they can give a little time to this invaluable work, I shall be grateful if they would write to me at 222, Blackfriars Road, S.E.1, when I shall be able to put them into touch with a club in their neighbourhood.—I am, etc.,

IAN M. LESLIE,
Chairman, London Federation of Boys' Clubs.

Obituary

W. B. FEATHERSTONE, M.D., J.P.

Dr. William Barltrop Featherstone, who died on Dec. 25, had been a member of the British Medical Association for 60 years. Though professionally a general practitioner, his long association with public work in Birmingham—he was a member of the City Council for 33 years—stands as an example to others. At the funeral, representatives were present from many aspects of the life of Birmingham, and particularly of Erdington.

Born on May 16, 1861, at Laleham, in the house where Dr. Thomas Arnold had lived before becoming headmaster of Rugby School, he was educated at Queen's College and at Mason's College, Birmingham, won prize medals in four subjects, and qualified M.R.C.S. in 1885; he graduated M.B.Lond. with first-class honours in 1887, proceeding M.D. two years later. When newly qualified he was beaten by a brilliant and more senior man in a close contest for the post of medical tutor, which in those days was the portal of entry to the staff of the Birmingham Medical School. Featherstone decided that he could not afford to wait for the next vacancy and felt, after some hesitation, that the public health service was not sufficiently absorbing, though he had taken the D.P.H. Therefore after holding posts in hospital and elsewhere he entered general practice at Erdington in 1890. For 20 years his main preoccupation was his busy practice, but he found time to develop local medical, nursing, and social interests. Moreover, in 1899 he joined as chairman of the directors a business enterprise which in the next 46 years prospered under his energetic leadership and balanced judgment. At the arbitration on the amalgamation of Erdington with Birmingham in 1911 he was a witness; a year later he was returned unopposed as Councillor for North Erdington on the Birmingham City Council, continuing to be a vigorous member until last October. He was opposed at only one election, and was made an alderman in 1932 while still in practice. A member of the Education Committee, he was chairman of the Elementary Education Subcommittee for 14 years, and spent each Easter at the annual conference of the National Union of Teachers; he was also an active member of the Hygiene and Special Schools Subcommittee and served on other important committees and boards. He was a Birmingham magistrate and for 30 years took a keen interest in local politics. When the controversy raged over the National Health Insurance Act in 1912 he was a firm supporter of moderate opinion, and for many years served on the Birmingham Panel Committee. Dr. Featherstone's other public activities and the parts he played in philanthropic work were too numerous to mention here. He practised at the Grove, by Erdington Village Green, for over 40 years, and in retirement lived at Wylde Green, Sutton Coldfield.

Punctual, quick, and methodical, he fulfilled each of his many duties with an ease that astonished those who knew how busy he was. He was a clear and concise speaker, and until his hearing failed a most efficient chairman; brief in utterance, far-seeing, tactful, and good-tempered, with a thorough grasp of the subjects to be discussed. In all things he endeavoured to keep acquaintance with what was going on: his oft-repeated inquiry was "Anything fresh?" A man of affairs, he loved to have plenty of appointments to keep.

When asked if he would have preferred to be a consulting physician he replied that he had no regrets; he was deeply interested in his community and in contact with people from so many aspects of their lives. Too old for active service in either of the great wars he worked as medical officer at the Norlands Red Cross Hospital in 1914–18. He married in 1893 Isabella, daughter of Henry J. Davies, of Brooklyn, U.S.A. She brought her vigorous personality to help him in his activities and was a well-known figure in the charitable, social, and political work of Birmingham until her death in 1929. Of their two sons, the younger was killed in France in 1918; the elder, Dr. H. W. Featherstone, O.B.E., served in the R.A.M.C. in both wars.

A. SIMPSON-SMITH, M.Ch., F.R.C.S.

Temp. Lieut.-Col. Alexander Simpson-Smith, R.A.M.C., surgeon to Great Ormond Street Hospital, was reported missing at Tobruk in June, 1942, but was known to have escaped once after all casualties had been dealt with. He is now reported killed, and buried in the war cemetery at Halfaya-Sollum, aged 42.

He was educated at Worksop School, at Cambridge University, and at Guy's Hospital, qualifying in 1925. He obtained the F.R.C.S. diploma in 1929, and a year later, after taking the M.Chir. degree at Cambridge, he was awarded a Richardson research fellowship at Massachusetts General Hospital, Boston. After returning to England he became resident surgical officer and radium registrar at Guy's, where he had already been junior demonstrator of anatomy and staff anaesthetist; later he was appointed resident assistant surgeon and then surgeon to out-patients at the West London Hospital and was elected to the surgical staff of the Hospital for Sick Children, Great Ormond Street. Alex. Simpson-Smith was also consulting surgeon to the Lord Mayor Treloar Cripples Hospital at Alton and to the mental hospitals at Napsbury and Shenley. He joined the B.M.A. in 1925, had been honorary secretary of the Medical Society of London and of the Clinical Section of the Royal Society of Medicine, and a member of the Council of the Harveian Society. On the outbreak of war he left his many civilian appointments to take a commission as major in the R.A.M.C., and after the fall of France went to the Middle East and served in Cairo and Tobruk with promotion to the rank of lieut.-colonel. For his work in Tobruk he was mentioned in dispatches, and a tribute to his original and successful methods of treatment has reached us from a surgeon in Rome, Dr. Giorgio Colognato, who saw the excellent results in an Italian hospital ship which carried many British prisoners of war in 1942.

News has been received from Canada of the death in Montreal of Dr. DAVID ALEXANDER SHIRRES, who was physician to the late Marquess of Aberdeen during his term as Governor-General of the Dominion. Dr. Shirres was born in Aberdeen in 1864 and studied medicine at the University of Aberdeen and at St. Bartholomew's Hospital and graduated M.B., C.M. Aberd. in 1886. He practised for a time in London in Harley Street before going to the United States in 1893, where he became professor of diseases of the nervous system in the State University of Vermont. Later he was appointed neurologist to the Montreal General Hospital.

Dr. JOHN GRACIE, consulting physician, Western Infirmary, Glasgow, died on Nov. 17, 1945. John Gracie was born at Moidart, Lochailort, Inverness-shire, in 1877. He graduated M.B., Ch.B. at Glasgow University in 1900 and became a Fellow of the Royal Faculty of Physicians and Surgeons in 1920. After graduation he engaged in general practice in the Partick district of Glasgow with his brother, the late Dr. Farquhar Gracie. During the war of 1914–18 he served in France with the R.A.M.C., and was in charge of a hospital in Marseilles. He joined the staff of the Western Infirmary in 1907, and was visiting physician from 1927 until 1942. Owing to staff shortage he was asked to retain his post as visiting physician. This he continued to do until March, 1945, despite the burden imposed upon his failing health. Dr. Gracie was honorary lecturer in clinical medicine at Glasgow University from 1930 until 1945. He was also visiting physician to Larkfield Hospital, Greenock, and Killearn E.M.S. Hospital. His advice and judgment were sound and always helpful, and by his original and kindly personality he earned the respect and affection of his colleagues and patients. He was medical superintendent to the Anchor Line, Ltd., Glasgow, and derived great pleasure from the personal contacts that this work afforded him. However, his greatest pleasure came from his teaching and associations with medical students. They were a source of unending interest to him, and he had the remarkable facility of forming lasting friendships with students and junior colleagues. He was keenly interested in the Highlands, and took an active part in the various Highland associations, especially those which concerned themselves with the welfare of students. A keen fisher, he always looked forward to a quiet month's fishing in his native county.

News has been received of the death on Dec. 6 of Dr. ERNEST BARON ROGERS, who in 1935 went to India as medical officer to a tea-planting firm in Assam and practised at Dooars, in Bengal. He was a medical student of Guy's Hospital and took the M.R.C.S., L.R.C.P. in 1929, becoming house-surgeon to the Warneford General Hospital at Leamington Spa. Dr. Rogers was honorary secretary of the Bengal and Dooars Division of the B.M.A. in 1939 and honorary secretary of the Assam and Northern Bengal Branch in 1941–3.

Dr. ENID KESTENBERG, formerly of the Malayan Medical Service, died at Epsom on Dec. 14. Born at Kilmarnock in 1899, Enid Aimée Robertson entered Queen Margaret College, Glasgow, and obtained the M.B., Ch.B. degrees of Glasgow University in 1921. After a period with the Church of Scotland Missionary Society at Kalimpong, India, she was appointed by the Colonial Office to various posts in Malaya at Kuala Lumpur and Kuala Kangsar. She took the D.T.M.&H. in 1928 and carried out research in Malaya on tropical diseases, more particularly typhus fever, which she herself contracted in 1936 and was invalided home. When war broke out she became interested in the M.T.C., and it was then that she met her husband, Mr. Arthur Kestenberg, who survives her with a son aged 2. Her brother, Dr. R. Cecil Robertson, of Shanghai and Hong Kong, died in Japanese hands in 1942.

Dr. EDWARD MILLIKEN GOLDIE, who died suddenly on Dec. 15, 1945, was the eldest son of the late James M. Goldie, a Northumbrian who came to London and was one of a small group of civil servants who founded the Civil Service Stores about 80 years ago. He was born in 1866, and was educated at King's College School and at Edinburgh University, where he became M.B. in 1890 and M.D. in 1896: a younger brother was also in the medical profession—Dr. J. O. Goldie, who died some years ago. After qualification Dr. E. M. Goldie held a resident post at the Mental Hospital at Bootham, York, and thereafter was for some years at the Poplar and Stepney Sick Asylum (now St. Andrew's Hospital). Before the end of the last century he had started in private practice at Woodford, Essex, from which he retired about ten years ago. For many years he was visiting medical officer to the Royal Merchant Seamen's Orphanage, Snaresbrook. He is survived by his widow, formerly assistant matron at the "Poplar and Stepney," and has one son and two daughters. His modest and unassuming disposition did not conceal from those who knew him his merits as a careful and trustworthy general practitioner of the older school. He joined the British Medical Association in 1894.

Dr. HARRY CORNER, of Jersey Farm, Sandridge, St. Albans, who died on Dec. 18, 1945, aged 81, was the second son of the late Dr. F. M. Corner, of Poplar. His elder brother was the late Dr. Frank Corner, J.P., and one of the younger brothers is Mr. Edred Corner, F.R.C.S., formerly surgeon to St. Thomas's Hospital; the late Dr. Cursham Corner was a first cousin. The family are of Yorkshire origin, from the village of Lythe, near Whitby, and are related to many Yorkshire families in that part of the North Riding. Harry Corner was educated at Epsom College and at the London Hospital, where he became house-physician. He qualified as M.R.C.S., L.R.C.P. in 1888, proceeding to M.B.Lond. in 1890 and M.D. in 1892. He took up mental hospital work, was assistant medical officer at Bethlem Hospital, and finally became medical superintendent at the Earlswood Idiot Asylum. He was also at one time lecturer on neurology and psychiatry at the North-East London Postgraduate College. In his youth Corner was a very good rugby player, both for his hospital and for Kent County. After retirement he took up the breeding of pedigree Jersey cattle and made much more than a local reputation at it. He married Miss Janet Connell, who died about ten years ago, leaving two sons and a daughter. The latter is also a keen Jersey breeder, and has her own herd. Dr. Corner joined the B.M.A. in 1891.

Dr. GEORGE VICTOR BAKEWELL, who died on Dec. 19 at Beaconsfield, was chairman of the Bucks Division of the B.M.A., which he joined in 1918, and represented his

Division at two Annual Meetings. Born in 1887, he studied medicine at Cambridge University and the London Hospital, taking the English Conjoint qualifications and the B.A., M.B., B.Ch. degrees in 1912. At the London Hospital he served as house-physician, house-surgeon, and resident accoucheur, and during the war of 1914–18 held a commission in the R.A.M.C. as specialist in operative surgery with the rank of major, and was mentioned in dispatches and awarded the O.B.E. He was a past-president of the Windsor and District Medical Society, and in recent years had been medical officer in charge of the Red Cross convalescent home at Beaconsfield.

The death took place on Dec. 22 at the Kent and Sussex Hospital at Tunbridge Wells of Dr. EDWARD TURTON, formerly honorary physician to the Hull Royal Infirmary. He was the third son of the late Thomas Coates Turton, L.D.S., of Goole, and was educated at Drax Grammar School and the Leeds Medical School. He graduated M.B., Ch.B. with honours at Victoria University in 1898, and in the same year passed as M.R.C.S., L.R.C.P. He obtained the M.D. degree in 1902 and the membership of the Royal College of Physicians in 1904. After acting both as house-surgeon and as house-physician at the Leeds Royal Infirmary he served as a captain in the Cape Medical Staff Corps in the South African War and was awarded the Queen's and King's medals. Shortly after his return from South Africa he was appointed an honorary physician to the Hull Royal Infirmary, to which he rendered distinguished service for many years until his retirement. He was also consulting surgeon to the Beverley and Driffield Hospitals. When the Territorial Force was formed he received a commission as captain in the 5th Batt., East Yorkshire Regiment, with which he was mobilized in 1914. He was given command in 1915 of the 2/1 Northumbrian Field Ambulance, which he took out to Salonika with the rank of lieut.-colonel. He was very active in the social life of Hull and was for two years president of the Hull Literary and Philosophical Society. He was a past-president of the East Yorkshire Branch of the B.M.A. and of the Hull Medical Society. He was a Past Master of the Kingston Lodge of Freemasons, being one of three brothers to hold this office, and a P.P.G.Deacon of North and East Yorks. He leaves a widow and one son. In his younger days Dr. Turton was a keen athlete and was particularly interested in wrestling. He was also an excellent shot with a Service rifle. He retired from practice somewhat early in life, but will be remembered by the older members of the profession in Hull and district as an able and painstaking physician who inspired the confidence of his fellow-practitioners. He was always willing and anxious to assist his colleagues, and to the younger ones his sound advice and friendly help were unselfishly accorded—H. L. M.

Dr. CHARLES HORNE WARNER, who died at Southwell, Notts, on Dec. 29, studied medicine at the Middlesex Hospital after graduating B.Sc.Lond. in 1908, and took the M.B., B.S. degrees in 1917 and the M.D. in 1921. He was house-physician and house-surgeon at the Middlesex and assistant M.O. at the Western and Park Fever Hospitals under the Metropolitan Asylums Board. Before taking the D.P.H. and becoming M.O.H. for the Beeston and Stapleton Urban District Council Dr. Warner had been lecturer and member of the board of examiners of the Pharmaceutical Society of Great Britain. During the war of 1914–18 he held a commission in the R.A.M.C., serving as M.O. to the 1/5 London Field Ambulance and the 1/20 Battalion London Regiment. He published a number of papers on chemical subjects and an article on "Ankylostomiasis in London" in these columns on July 26, 1919. He married Dr. Refna Horne Mallet.

We regret to report the death in London of Dr. H. A. DE MORGAN, of Douglas, Isle of Man, where he had practised for the past twenty years and was much beloved by his patients. A student of the Middlesex Hospital, where one of his relatives was a surgeon and is commemorated in the name of a ward, Harold Aylmer De Morgan qualified in 1915, and after serving with the rank of captain, R.A.M.C., in the war of 1914–18 and as house-surgeon in Torbay Hospital, he took the M.B., B.S.Lond. degrees in 1920. Soon after settling in the Isle of Man he was elected honorary physician to Noble's Hospital; he was also a medical referee under the National Health Insurance Acts, and held numerous other appointments, including that of medical assessor to the Royal Courts of Justice. In 1938–9 Dr De Morgan was president of the Isle of Man Medical Society and the Isle of Man Branch of the B.M.A., which he had joined in 1927. Though the strain of the war years must have told upon his strength he seemed in good health until November, when he came to London for specialist advice at his old hospital, and died there on Dec. 8. At the funeral service in St. Thomas's Church, Douglas, Archdeacon Stockwood gave an address paying tribute to Dr. De Morgan's work and character. The congregation included almost every member of the medical profession in the island and representatives of the hospital committee and nursing staff.

Mr. WILLIAM HENRY OGLE WOODS, a senior member of the medical staff of the Swansea General Hospital, who died on Dec. 29, aged 70, had been chairman of the Swansea Division of the B.M.A. in 1933. The son of an Irish father and a Welsh mother, he studied medicine at Cambridge and at St. Thomas's Hospital, taking his B.A. in the Natural Sciences Tripos and graduating M.B., B.Ch. in 1901, and then served as house-surgeon at St. Thomas's and senior resident medical officer at Queen Charlotte's Hospital. He obtained the F.R.C.S.Ed. diploma in 1925. His work at the Swansea General Hospital began as senior resident surgical officer in 1916, and from January, 1925, he was honorary anaesthetist until his appointment as supernumerary surgeon in April, 1926. He became a full surgeon in 1935 and orthopaedic surgeon a year later; he was also medical officer in charge of the venereal diseases clinic. Mr. Woods suffered much disability after the amputation of one leg twenty years ago. He was, in the words of a colleague, "a painstaking surgeon whose judgment was very sound; an extraordinary man of tremendous courage, who just carried on despite his handicaps, probably doing more work than any of us. A mechanical mind, and perhaps his own experience, helped him in his orthopaedic work, and he made at least as great demands upon himself as upon his patients."

J. B. G. S. writes: May I be allowed to pay tribute to my old chief Surg. Commander A. H. D. RICHMOND, R.N.V.R., who was S.M.O. for over 2 years at H.M.S. *St. Vincent*, Gosport. I feel the profession as a whole, and the Royal Naval Medical Branch in particular, have lost a fine figure. I served under him for 10 months during parts of 1944 and 1945, and no one could have had a more lovable and loyal superior officer. He was a gifted organizer and knew how to obtain the best from his juniors. He had served with the R.N.V.R. during the war at Grimsby, where he was formerly a practitioner and had occupied the post of Admiralty surgeon and agent and police surgeon as well. He was universally popular at *St. Vincent*, and no one ever consulted him professionally without feeling better for it. His personality radiated confidence. In later life he battled most heroically against a blood affection which needed constant watching and treatment; it might well have daunted a man of lesser spirit, and of the ultimate issue he was well aware. His sudden death after a short sharp illness in the Royal Naval Hospital at Haslar has come as a shock and sorrow to all who knew him. He has bequeathed to them the memory of a great gentleman and inspiring chief.

The following well-known medical men have died abroad: Dr. ALEJANDRA A. RAIMONDI, an eminent phthisiologist of Buenos Aires, aged 67; Dr. F. H. ALBEE, a prominent orthopaedic surgeon of New York, aged 68.

Thirty-two members of the Canadian Forces who served over-seas and are now demobilized have been awarded scholarships by the British Council to enable them to study in Britain. All of post-graduate standing, they have been selected in co-operation with the Canadian Department of Veterans' Affairs, and their subjects include medicine, dentistry, physics, geology, textile technology, town-planning, librarianship, economics, law, education, music and drama, and fine arts. The scholarships are for periods ranging in the first instance from six months to a year, but some may be extended. The holders of medical scholarships and the colleges, etc., at which they are now studying are: Capt. R. W. Begg, educated at Dalhousie University and was medical officer with the 1st Canadian Parachute Batt., studying pathology at Lincoln College, Oxford; Capt. J. M. Corston, of Halifax, N.S., educated at Dalhousie and Edinburgh Universities, a medical officer, studying obstetrics and gynaecology at the Radcliffe Infirmary, Oxford; Major C. Hollenberg, of Winnipeg, educated at the University of Manitoba, a medical officer, studying surgery at the University of Liverpool; Capt. G. Homer, of Winnipeg, a medical officer whose early work was among Eskimos, studying surgery at the Royal College of Surgeons; Surg. Cmdr. A. B. McCarten, of Winnipeg, educated at the University of Manitoba, studying surgery at St. Bartholomew's Hospital; Capt. W. H. Rose, of Montreal, a medical officer, studying cardiology at the British Postgraduate Medical School, London; and Major F. R. Tucker, educated at the University of Manitoba, a medical officer, studying orthopaedic surgery at the University of Liverpool.

Medico-Legal

ANTI-VIVISECTION SOCIETIES AND INCOME TAX

For over fifty years anti-vivisection societies have been granted exemption from income tax on interest on their very large investments, as the result of a finding by Mr. Justice Chitty in 1895, although in 1929 Mr. Justice Russell (now Lord Russell of Killowen) threw doubt on that decision in his judgment in the Grove-Grady will case. In 1942 Sir Leonard Rogers drew up a memorandum on "Are Anti-vivisection Societies Good Charities?" and this, by direction of the committee of the Research Defence Society, was sent to the Treasury with the request that the grounds on which anti-vivisection societies were exempted from income tax as "charities" should be reconsidered in the light of the immense advances in curative and preventive medicine due to animal experiments during the last half-century. The Inland Revenue authorities asked for evidence in support of the statements in the memorandum, and on receipt of this from nine medical and veterinary scientists a test case was heard in December, 1943, by the Special Commissioners of Income Tax. The findings of the Commissioners were cited in an article in the *British Medical Journal* of Sept. 1, 1945 (p. 291), after an appeal in the King's Bench Division of the High Court before Mr. Justice Macnaghten at the close of July. The Commissioners found that, on balance, the object of the National Anti-vivisection Society, "so far from being for the public benefit, was gravely injurious thereto, with the result that the society could not be regarded as a charity. . . . But, upon the authorities, we regard ourselves as precluded from so holding," and they therefore felt bound to allow the society's claim. Mr. Justice Macnaghten, after hearing legal arguments for two days, reversed that decision, allowed the appeal, and revoked the order granting exemption from income tax, with costs against the society.

At the close of December this case (Inland Revenue *v.* The National Anti-vivisection Society) came before the Court of Appeal, consisting of the Master of the Rolls (Lord Greene), Lord Justice MacKinnon, and Lord Justice Tucker. The Crown contended that if experiments on animals were abolished medical science and research would be retarded, and benefit to the health of the community would be frustrated. The Court, by a majority, dismissed the appeal against Mr. Justice Macnaghten's judgment, but gave leave to appeal to the House of Lords.

The Master of the Rolls in his dissenting judgment said there was nothing to be gained by pretending that vivisection did not cause pain to animals. The objects of the society, to prevent infliction of pain on animals, were clearly good in themselves and were not prevented from being so by the fact that experiments on animals might lead to benefits for mankind. Lord Justice MacKinnon, on the other hand, held that whether the objects of a trust were beneficial to the community was a question of fact to be established by evidence. Here he was satisfied that the achievement of the society's purposes would not only not be beneficial to the community but would inflict injury on all mankind. The motives of well-meaning subscribers were not material; it was for the Court to decide whether in fact the purposes of the society were of benefit to the community. Lord Justice Tucker, in his judgment agreeing that the appeal should be dismissed, said that the practice of vivisection had been legalized under safeguards, and he could not see how a trust to abolish vivisection could be a benefit to the community.

The twenty-sixth annual report of the James Mackenzie Institute for Clinical Research, St. Andrews, covers the year ending July 31, 1945. As war conditions still prevailed the activities had to be continued on the restricted lines of the past few years; but 63 new cases and 521 additional notes were added to the files: 397 films were exposed in the *x*-ray department, and 399 examinations were carried out in the laboratories. As in former years, the voluntary medical inspection of university students was again carried out at the Institute by Dr. R. V. C. Ash. The council is now faced with the need to plan for the future and is giving close attention to the task that lies ahead, so that the resources at its command may be used to the best advantage.

Universities and Colleges

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A course of five public lectures on "Pharmacological Chemistry" will be given by Mr. F. Bergel, Ph.D., in the Department of Pharmacology, University College, Gower Street, W.C., on Tuesdays, at 5.15 p.m.:—Jan. 15: Survey of the fields of pharmacotherapeutics. Jan. 22: Prosthetic compounds: vitamins, hormones, and other active substances occurring in the body. Jan. 29 and Feb. 5: Symptomatic drugs: synthetic analgesics and antispasmodics. Feb. 12: Etiotropic compounds: antimicrobials. The lectures are open without fee or ticket to students of the University and others interested in the subject.

UNIVERSITY OF BIRMINGHAM

The following candidates have been approved at the examinations indicated:

M.B., CH.B.—*†J. K. Baird, *‡D. H. Barnbrook, K. D. Roberts, R. J. Bennett, D. L. Crombie, J. C. Foster, ‡J. C. Haworth, Rachel M. Hickinbotham, G. Jacobs, R. F. Martin, W. I. Murdoch, T. A. W. Parkes, F. C. S. Pearson, H. M. Rodger, Dorothy M. Tidmas, P. T. Walker. *Part I (Midwifery and Diseases of Women and Paediatrics)*: E. J. Allaway, A. C. Allin, P. G. Bevan, W. I. H. Bourne, J. Butler, B. O. Clements, Pamela J. Chappell, Fay P. S. Cull, S. P. Dawson, Rosemary Dearden, W. B. L. Downing, Jeah M. MacN. Dunn, Margaret J. Dutton, Jeanette G. Eveson, Barbara M. Finch, D. P. Fitzgerald, Frances A. Fouracres, D. M. Garratt, Joan E. Garside, N. L. Gleiberman, F. R. Goodwin, P. H. T. Hall, Norah K. S. Howkins, Jose V. Keats, H. M. Kent, D. E. T. Laird, Sylvia E. Leather, Rosemary T. Mitton, G. C. Richards, Jeannie E. Roulston, Patricia E. Smith, J. E. Tremlett, F. E. Webb, J. T. H. Wise, C. Wood.

*With second-class honours. †Distinction in surgery. ‡Distinction in paediatrics.

The following scholarships, exhibitions, and prizes have been awarded in the Faculty of Medicine:

Queen's Scholarship (Final Year): D. H. Barnbrook. *Ingleby Scholarships*: D. H Barnbrook, J. C. Haworth. *Arthur Foxwell Memorial Medal*: J. C. Haworth. *Sampson Gamgee Memorial Medal* and *Priestley Smith Prize in Ophthalmology*: J. K. Baird. *Lawrence Barnard Carlton Scholarship*: E. A. Marsland. *Alexander Youngson Prize*: Dylys A. Owen, P. Goodwin.

UNIVERSITY OF BRISTOL

Mr. R. Milnes Walker has been appointed professor of surgery in succession to Prof. A. Rendle Short, who is retiring. The announcement last week stated erroneously that this is a newly established chair. The University of Bristol, since it first received its Charter in 1909, has had a chair of surgery, which has been filled in succession by Prof. James Swain, the late C. A. Morton, the late E. W. Hey Groves, and Prof. Rendle Short.

UNIVERSITY OF DURHAM

Richard Charles Browne, B.M., B.Ch., M.R.C.P., has been appointed to the Nuffield Chair of Industrial Health at Newcastle-upon-Tyne.

At a Congregation held on Dec. 21 the following medical degrees were conferred:

M.S.—R. J. Rutherford, W. K. Yeates.

M.B., B.S.—Isabel Aitchison, Lilian Alexander, Jean E. Arkle, J. Arkless, R. J. Belas, Eileen E. Cameron, Rachel Cameron, E. S. Clarke, Barbara E. Corlett, G. R. Cottrell, J. D. K. Dawes, R. J. Dias, Joyce Dixon, R. H. Etherington, V. Franks, C. D. Fullerton, G. S. Graham, Jean A. Grant, V. F. Harrison, Joyce C. Harvey, Rita Hedley, G. L. Hindson, P. J. Hogg, A. S. Hughes, Patricia M. Hutchinson, A. C. Jenkins, C. Johnson, W. Latimer, Elizabeth Lawson, S. Levy, Mary Meikle, F. R. G. Mellor, M. Menczer, Jean H. Mitchell, J. S. Noble, J. Oldfield, A. C. Parry, Jean McM. Paterson, B. E. Roebuck, W. M. Ross, C. B. S. Schofield, H. L. Simon, Jean D. Smedley, E. R. Smith, F. J. Spencer, N. B. Sprague, Kathleen M. Stevens, Mary Storrier, S. M. Szpiro, C. P. Tanner, T. C. Taylor, D. S. Thomson, J. N. Walton, D. D. Webster, A. E. White, Joan Williams, M. Wood, W. Wood, K. D. Woolas, W. F. M. Hudson‡(*in absentia*)

UNIVERSITY OF WALES

The following candidates for the degrees of M.B., B.Ch. at the Welsh National School of Medicine have been approved at the examinations indicated:

SURGERY.—J. W. Bowen, Gwenllian M. Griffith, D. B. Harries, K. I. Roberts D. L. Stone (with distinction), D. R. Thomas, W. D. C. Thomas.

PATHOLOGY AND BACTERIOLOGY.—Beryl H. Jones, B. F. Richards, T. M. Warren.

PHARMACOLOGY.—S. I. Cohen, Anne Guy, Constance A. M. Llewellyn, Mary C. Sumption.

MEDICINE.—Jane W. Anderson, D. Anthony, A. J. Barry, L. A. J. Evans, I. D. Jacobs, P. G. Jagger, D. G. Jones, Enid A. Reed.

OBSTETRICS AND GYNAECOLOGY.—A. H. Beynon, Nora C. Curran, Gareth E. Davies, Margaret E. Davies, Clare G. M. Dillon, E. D. Edwards, J. M. Hughes, M. G. Jones, N. E. H. Jones, Mary Lawrence, R. Medlicott, Goronwy Owen, Barbara M. Parker, Beryl P. Roberts, K. I. Roberts, D. M. Rowlands, Jean T. Smith, D. M. Watkins.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The William Blair-Bell Memorial Lecture, 1946, will be delivered by Dr. Leonard Colebrook, F.R.C.O.G., on Friday, Jan. 25, at 5 p.m., at the College House, 58, Queen Anne Street, W. His subject is "Looking Backwards and Forwards: Control of Infection in Obstetrics."

New regulations have been made increasing the special and general training required of candidates for admission to membership of the Royal College of Obstetricians and Gynaecologists. The regula-

tions will apply to all who sit for the membership examination for the first time in January, 1947, except those who have served in a medical capacity in the Forces during the war, who may apply for permission to take the examination at any time under the provisions of the regulations of March, 1944. Details may be obtained from the Secretary of the College, 58, Queen Anne Street, W.1. It is also the intention of the College, when facilities are available, to increase the period of training for the membership examination from the present minimum of three years to five years. Sufficient notice of this will be given to enable intending candidates to plan their courses of training.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following letter has been received by Sir Alfred Webb-Johnson, Bt., President of the Royal College of Surgeons, from Dr. Donald Balfour, Director of the Mayo Foundation, accompanying a gift of $5,000 to the Restoration and Development Fund:

My dear Sir Alfred,

At the meeting to-day of the Medical Graduate Committee of the Mayo Foundation it was recommended to the Board of Trustees of the Mayo Properties Association that a gift be made to the Royal College of Surgeons of England on behalf of the staff of the Mayo Clinic and the faculty of the Mayo Foundation.

We hope that this gift will be received as it is given—namely, as evidence of the desire of the staff of the Clinic, particularly the surgical staff, to aid in the plans for the reconstruction of the buildings and facilities of the Royal College of Surgeons so that in this restoration the great influence of the College in elevating surgery and the surgical specialties will be continued in the future not only in the British Empire but throughout the world.—Yours sincerely,

DONALD C. BALFOUR.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Prof. Harry Platt, M.S., F.R.C.S., will deliver the James Watson Lecture in the hall of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, on Wednesday, Jan. 23, at 4 p.m. His subject is "Localized Cystic Lesions of Bone."

The American College of Surgeons has conferred (*in absentia*) its Fellowship (F.A.C.S.) on Mr. E. R. Garnett Passe, F.R.C.S., at the meeting of the Regents in November, 1945.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the incidence of whooping-cough and of scarlet fever continued to fall, notifications being 95 and 35 fewer, respectively. Dysentery was less prevalent, with 83 fewer cases. The only disease with a greater incidence was acute pneumonia, of which there were 197 more notifications than in the preceding week.

No further cases of dysentery were reported from the large outbreak of the preceding week in Hertfordshire, Hatfield R.D. The one fresh outbreak during the week involved 10 cases in Rutland, Oakham U.D. and R.D. A large rise occurred in Surrey, from 9 to 33. The other large returns were Lancashire 52, London 20, Essex 15, Warwickshire 12, Yorks West Riding 11, and Middlesex 10.

The decrease in whooping-cough was mainly confined to the northern section of the country. The only large fluctuation in the trend of scarlet fever was a fall of 29 in London. The main changes of any size in the returns of diphtheria were decreases of 13 in both Suffolk and Yorks West Riding. The most notable of the local increases in pneumonia was in Herefordshire, Hereford R.D., where the cases rose from 1 to 51. There were rises in the notifications of measles in Norfolk 40, and Lancashire 26.

In *Scotland* infectious diseases were less prevalent, notifications all showing a decrease, except those for diphtheria, which rose by 2. During the past six weeks dysentery has been at the lowest level since last July. The recent outbreak of paratyphoid fever in the East Fife coast area has been traced to a girl who sold ice-cream.

Infantile Paralysis in Malta

In the last fortnight of December 33 cases were reported in the island. Among those affected were a sailor and a member of the W.R.N.S.

Week Ending December 29

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,376, whooping-cough 724, diphtheria 514, measles 565, acute pneumonia 1,118, cerebrospinal fever 38, acute poliomyelitis 25, dysentery 265, paratyphoid 5, typhoid 9.

No. 51

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945 (a)	1945 (b)	1945 (c)	1945 (d)*	1945 (e)	1944 (Corresponding Week) (a)	1944 (b)	1944 (c)	1944 (d)*	1944 (e)
Cerebrospinal fever	43	4	13		2	33	2	12		—
Deaths		—	1				2	1		
Diphtheria	569	50	155		21	456	23	117		20
Deaths	12	1	4	2	1	5	—	1	—	—
Dysentery	230	20	43		—	173	44	133		—
Deaths					—				—	—
Encephalitis lethargica, acute	1	—	2		—	1	—	—		—
Deaths		—					—			
Erysipelas			30		3			52		2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years										
Deaths	58	4	9	21	1	52	3	6	12	2
Measles†	623	52	92		3	8,433	163	339		248
Deaths	—	—	—	1	—	13	—	1	—	—
Ophthalmia neonatorum	46	2	10		2	52	4	13		—
Deaths										
Paratyphoid fever	4	—	—		—	3	—	1 (B)		—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal‡	1,166	92	6		5	715	28	10		13
Deaths (from influenza)	76	6	4	—	—	28	4	3	—	—
Pneumonia, primary		81	192	18	7		41	338	18	18
Deaths										
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	23	—	3		—	5	1	—		—
Deaths		—					—			
Puerperal fever		2	11		—		1	15		1
Deaths										
Puerperal pyrexia§	136	19	10		2	130	4	11		—
Deaths		—					—			
Relapsing fever	1	—			—	—	—			—
Deaths										
Scarlet fever	1,718	139	251		45	1,906	52	216		44
Deaths	1	—	1	—	—	3	1	—	—	—
Smallpox	—	—	—		—	—	—	—	—	—
Deaths					—				—	—
Typhoid fever	5	1	1		1	5	—	2		3
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough†	1,100	92	50		6	1,317	53	117		10
Deaths	12	—	1	—	—	10	—	4	1	—
Deaths (0–1 year)	454	62	52	49	12	420	37	75	45	31
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	6,088	979	665	234	141	5,354	785	717	223	164
Annual death rate (per 1,000 persons living)			15·1	15·1	¶			16·5	14·5	¶
Live births	6,890	956	841	332	239	6,857	605	889	279	257
Annual rate per 1,000 persons living			16·8	21·4	¶			18·1	18·1	¶
Stillbirths	227	14	31			202	20	27		
Rate per 1,000 total births (including stillborn)			36					29		

* Returns for infectious diseases for Eire are included in with those for the following week.

† Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

¶ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

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UNIVERSITY OF BIRMINGHAM

The following candidates have been approved at the examinations indicated:

M.B., CH.B.—*†J. K. Baird, *‡D. H. Barnbrook, K. D. Roberts, R. J. Bennett, D. L. Crombie, J. C. Foster, ‡J. C. Haworth, Rachel M. Hickinbotham, G. Jacobs, R. F. Martin, W. I. Murdoch, T. A. W. Parkes, F. C. S. Pearson, H. M. Rodger, Dorothy M. Tidmas, P. T. Walker. *Part I (Midwifery and Diseases of Women and Paediatrics)*: E. J. Allaway, A. C. Allin, P. G. Bevan, W. I. H. Bourne, J. Butler, B. O. Clements, Pamela J. Chappell, Fay P. S. Cull, S. P. Dawson, Rosemary Dearden, W. B. L. Downing, Jeah M. MacN. Dunn, Margaret J. Dutton, Jeanette G. Eveson, Barbara M. Finch, D. P. Fitzgerald, Frances A. Fouracres, D. M. Garratt, Joan E. Garside, N. L. Gleiberman, F. R. Goodwin, P. H. T. Hall, Norah K. S. Howkins, Jose V. Keats, H. M. Kent, D. E. T. Laird, Sylvia E. Leather, Rosemary T. Mitton, G. C. Richards, Jeannie E. Roulston, Patricia E. Smith, J. E. Tremlett, F. E. Webb, J. T. H. Wise, C. Wood.

*With second-class honours. †Distinction in surgery. ‡Distinction in paediatrics.

The following scholarships, exhibitions, and prizes have been awarded in the Faculty of Medicine:

Queen's Scholarship (Final Year): D. H. Barnbrook. *Ingleby Scholarships*: D. H Barnbrook, J. C. Haworth. *Arthur Foxwell Memorial Medal*: J. C. Haworth.. *Sampson Gamgee Memorial Medal* and *Priestley Smith Prize in Ophthalmology*: J. K. Baird. *Lawrence Barnard Carlton Scholarship*: E. A. Marsland. *Alexander Youngson Prize*: Dylys A. Owen, P. Goodwin.

UNIVERSITY OF BRISTOL

Mr. R. Milnes Walker has been appointed professor of surgery in succession to Prof. A. Rendle Short, who is retiring. The announcement last week stated erroneously that this is a newly established chair. The University of Bristol, since it first received its Charter in 1909, has had a chair of surgery, which has been filled in succession by Prof. James Swain, the late C. A. Morton, the late E. W. Hey Groves, and Prof. Rendle Short.

UNIVERSITY OF DURHAM

Richard Charles Browne, B.M., B.Ch., M.R.C.P., has been appointed to the Nuffield Chair of Industrial Health at Newcastle-upon-Tyne.

At a Congregation held on Dec. 21 the following medical degrees were conferred:

M.S.—R. J. Rutherford, W. K. Yeates.

M.B., B.S.—Isabel Aitchison, Lilian Alexander, Jean E. Arkle, J. Arkless, R. J. Belas, Eileen E. Cameron, Rachel Cameron, E. S. Clarke, Barbara E. Corlett, G. R. Cottrell, J. D. K. Dawes, R. J. Dias, Joyce Dixon, R. H. Etherington, V. Franks, G. D. Fullerton, G. S. Graham, Jean A. Grant, V. F. Harrison, Joyce C. Harvey, Rita Hedley, G. L. Hindson, P. J. Hogg, A. S. Hughes, Patricia M. Hutchinson, A. C. Jenkins, C. Johnson, W. Latimer, Elizabeth Lawson, S. Levy, Mary Meikle, F. R. G. Mellor, M. Menczer, Jean H. Mitchell, J. S. Noble, J. Oldfield, A. C. Parry, Jean McM. Paterson, B. E. Roebuck, W. M. Ross, C. B. S. Schofield, H. L. Simon, Jean D. Smedley, E. R. Smith, F. J. Spencer, N. B. Sprague, Kathleen M. Stevens, Mary Storrier, S. M. Szpiro, C. P. Tanner, T. C. Taylor, D. S. Thomson, J. N. Walton, D. D. Webster, A. E. White, Joan Williams, M. Wood, W. Wood, K. D. Woolas, W. F. M. Hudson (*in absentia*)

UNIVERSITY OF WALES

The following candidates for the degrees of M.B., B.Ch. at the Welsh National School of Medicine have been approved at the examinations indicated:

SURGERY.—J. W. Bowen, Gwenllian M. Griffith, D. B. Harries, K. I. Roberts D. L. Stone (with distinction), D. R. Thomas, W. D. C. Thomas.

PATHOLOGY AND BACTERIOLOGY.—Beryl H. Jones, B. F. Richards, T. M. Warren.

PHARMACOLOGY.—S. I. Cohen, Anne Guy, Constance A. M. Llewellyn, Mary C. Sumption.

MEDICINE.—Jane W. Anderson, D. Anthony, A. J. Barry, L. A. J. Evans, I. D. Jacobs, P. G. Jagger, D. G. Jones, Enid A. Reed.

OBSTETRICS AND GYNAECOLOGY.—A. H. Beynon, Nora C. Curran, Gareth E. Davies, Margaret E. Davies, Clare G. M. Dillon, E. D. Edwards, J. M. Hughes, M. G. Jones, N. E. H. Jones, Mary Lawrence, R. Medlicott, Goronwy Owen, Barbara M. Parker, Beryl P. Roberts, K. I. Roberts, D. M. Rowlands, Jean T. Smith, D. M. Watkins.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The William Blair-Bell Memorial Lecture, 1946, will be delivered by Dr. Leonard Colebrook, F.R.C.O.G., on Friday, Jan. 25, at 5 p.m., at the College House, 58, Queen Anne Street, W. His subject is "Looking Backwards and Forwards: Control of Infection in Obstetrics."

New regulations have been made increasing the special and general training required of candidates for admission to membership of the Royal College of Obstetricians and Gynaecologists. The regula-

tions will apply to all who sit for the membership examination for the first time in January, 1947, except those who have served in a medical capacity in the Forces during the war, who may apply for permission to take the examination at any time under the provisions of the regulations of March, 1944. Details may be obtained from the Secretary of the College, 58, Queen Anne Street, W.1. It is also the intention of the College, when facilities are available, to increase the period of training for the membership examination from the present minimum of three years to five years. Sufficient notice of this will be given to enable intending candidates to plan their courses of training.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following letter has been received by Sir Alfred Webb-Johnson, Bt., President of the Royal College of Surgeons, from Dr. Donald Balfour, Director of the Mayo Foundation, accompanying a gift of $5,000 to the Restoration and Development Fund:

My dear Sir Alfred,

At the meeting to-day of the Medical Graduate Committee of the Mayo Foundation it was recommended to the Board of Trustees of the Mayo Properties Association that a gift be made to the Royal College of Surgeons of England on behalf of the staff of the Mayo Clinic and the faculty of the Mayo Foundation.

We hope that this gift will be received as it is given—namely, as evidence of the desire of the staff of the Clinic, particularly the surgical staff, to aid in the plans for the reconstruction of the buildings and facilities of the Royal College of Surgeons so that in this restoration the great influence of the College in elevating surgery and the surgical specialties will be continued in the future not only in the British Empire but throughout the world.—Yours sincerely,

DONALD C. BALFOUR.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Prof. Harry Platt, M.S., F.R.C.S., will deliver the James Watson Lecture in the hall of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, Glasgow, on Wednesday, Jan. 23, at 4 p.m. His subject is "Localized Cystic Lesions of Bone."

The American College of Surgeons has conferred (*in absentia*) its Fellowship (F.A.C.S.) on Mr. E. R. Garnett Passe, F.R.C.S., at the meeting of the Regents in November, 1945.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the incidence of whooping-cough and of scarlet fever continued to fall, notifications being 95 and 35 fewer, respectively. Dysentery was less prevalent, with 83 fewer cases. The only disease with a greater incidence was acute pneumonia, of which there were 197 more notifications than in the preceding week.

No further cases of dysentery were reported from the large outbreak of the preceding week in Hertfordshire, Hatfield R.D. The one fresh outbreak during the week involved 10 cases in Rutland, Oakham U.D. and R.D. A large rise occurred in Surrey, from 9 to 33. The other large returns were Lancashire 52, London 20, Essex 15, Warwickshire 12, Yorks West Riding 11, and Middlesex 10.

The decrease in whooping-cough was mainly confined to the northern section of the country. The only large fluctuation in the trend of scarlet fever was a fall of 29 in London. The main changes of any size in the returns of diphtheria were decreases of 13 in both Suffolk and Yorks West Riding. The most notable of the local increases in pneumonia was in Herefordshire, Hereford R.D., where the cases rose from 1 to 51. There were rises in the notifications of measles in Norfolk 40, and Lancashire 26.

In *Scotland* infectious diseases were less prevalent, notifications all showing a decrease, except those for diphtheria, which rose by 2. During the past six weeks dysentery has been at the lowest level since last July. The recent outbreak of paratyphoid fever in the East Fife coast area has been traced to a girl who sold ice-cream.

Infantile Paralysis in Malta

In the last fortnight of December 33 cases were reported in the island. Among those affected were a sailor and a member of the W.R.N.S.

Week Ending December 29

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,376, whooping-cough 724, diphtheria 514, measles 565, acute pneumonia 1,118, cerebrospinal fever 38, acute poliomyelitis 25, dysentery 265, paratyphoid 5, typhoid 9.

No. 51

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945 (a)	(b)	(c)	(d)*	(e)	1944 (Corresponding Week) (a)	(b)	(c)	(d)*	(e)
Cerebrospinal fever	43	4	13		2	33	2	12		—
Deaths		—	1				2	1		
Diphtheria	569	50	155		21	456	23	117		20
Deaths	12	1	4	2	1	5	—	1	—	—
Dysentery	230	20	43		—	173	44	133		—
Deaths					—				—	—
Encephalitis lethargica, acute	1	—	2		—	1	—	—		—
Deaths		—					—			
Erysipelas			30		3			52		2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years	58	4	5	21	1	52	3	6	12	2
Deaths										
Measles†	623	52	92		3	8,433	163	339		248
Deaths	—	—	—	1	—	13	—	1	—	—
Ophthalmia neonatorum	46	2	10		2	52	4	13		—
Deaths										
Paratyphoid fever	4	—	—		—	3	—	1 (B)		—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal‡	1,166	92	6		5	715	28	10		13
Deaths (from influenza)	76	6	4	—	—	28	4	3	—	—
Pneumonia, primary		81	192	18	7		41	338	18	18
Deaths										
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	23	—	3		—	5	1	—		—
Deaths		—					—			
Puerperal fever		2	11		—		1	15		1
Deaths										
Puerperal pyrexia§	136	19	10		2	130	4	11		—
Deaths		—					—			
Relapsing fever	1	—			—	—	—			—
Deaths										
Scarlet fever	1,718	139	251		45	1,906	52	216		44
Deaths	1	—	1	—	—	3	1	—	—	—
Smallpox	—	—	—		—	—	—	—	—	—
Deaths					—				—	—
Typhoid fever	5	1	1		1	5	—	2		3
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough†	1,100	92	50		6	1,317	53	117		10
Deaths	12	—	1	—	—	10	—	4	1	—
Deaths (0–1 year)	454	62	52	49	12	420	37	75	45	31
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	6,088	979	665	234	141	5,354	785	717	223	164
Annual death rate (per 1,000 persons living)			15·1	15·1	¶			16·5	14·5	¶
Live births	6,890	956	841	332	239	6,857	605	889	279	257
Annual rate per 1,000 persons living			16·8	21·4	¶			18·1	18·1	¶
Stillbirths	227	14	31			202	20	27		
Rate per 1,000 total births (including stillborn)			36					29		

* Returns for infectious diseases for Eire are included in with those for the following week.

† Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

¶ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The Liverpool Queen Victoria District Nursing Association announces that the launching ceremony of its mobile physiotherapy unit will be performed by the Lord Mayor of Liverpool at the Central Home, 1, Princes Road, on Tuesday, Jan. 15, at 2.30 p.m. Liverpool, which was the first city to start domiciliary nursing in 1859, is now the first city to run a mobile physiotherapy unit for domiciliary massage treatment. The unit is primarily meant to serve those patients who cannot attend out-patient departments of hospitals or afford to pay an economic fee for private treatment.

The Ministry of Labour's industrial rehabilitation centre at "Woodlee," Egham, Surrey, will be formally opened on Jan. 15 by Mr. Ernest Bevin, who was Minister of Labour when the centre was established. The ceremony will be at 2.30 p.m. and visitors will be able to make a short tour of the centre to see what is being done there.

A meeting of the Food Group of the Society of Chemical Industry will be held on Wednesday, Jan. 16, at 6.30 p.m. at the rooms of the Chemical Society, Burlington House, London, W.1, to discuss the subject of science and tea. Sir Frank Engledow will open the meeting, and papers will be read by Dr. L. H. Lampitt and Dr. A. E. Bradfield. Members may introduce friends in person.

The annual general meeting of the Research Board for the Correlation of Medical Science and Physical Education will be held at the Royal Institution, 21, Albemarle Street, W.1, on Jan. 16, at 2.30 p.m. Dr. Frank Howitt, chairman of the board, will preside, and the speakers will include the Minister of Health, Mr. Aneurin Bevan, Sir Alfred Webb-Johnson, Air Marshal Sir Harold Whittingham, Sir Reginald Watson-Jones, and Brigadier F. A. E. Crew. The board's report on medical science and physical education in industry will be presented at the meeting. This is the fourth of the series; the three earlier ones, which were presented at the meeting last year, were on medical science and physical education in relation to maternity and child welfare, education, and the Services. Tickets for the meeting on Jan. 16 may be obtained from Miss Bronwen Lloyd-Williams, 37f, Regent's Park Road, London, N.W.1.

The following radiological meetings will be held in London this month: British Institute of Radiology, 32, Welbeck Street, W., Thursday, Jan. 17, 8 p.m. Prof. H. T. Flint, "Development of Ultra Short Waves." Therapy Section of Faculty of Radiologists, at Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., Friday, Jan. 18, 2.30 p.m. Discussion on "Treatment of Birthmarks, Keloids, and Warts," to be opened by Dr. S. Bryan Adams, Dr. Inez Apthomas, Dr. J. F. Bromley, Dr. C. J. L. Thurgar, Dr. W. Shanks, Mr. J. Jackson Richmond, Dr. A. J. Durden Smith. Radiology Section of Royal Society of Medicine, 1, Wimpole Street, W., Friday, Jan. 18, 8 p.m. Papers by Dr. J. Blair Hartley, "Tomography in the Diagnosis of Lung Carcinoma"; Dr. R. A. Kemp Harper, "Some Observations on the Radiology of the Pancreas"; Dr. A. S. Johnstone, "Experimental Study of the Vertebral Venous System."

A meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Friday, Jan. 18, at 5 p.m., when Dr. Norman Tattersall will deliver his presidential address on "The Tuberculosis Service and the Future." This will be followed by a paper on "The Pathological Changes in the Pneumoconiosis of Coal-miners" by Dr. Jethro Gough. At 8 p.m. Dr. Enid M. Rogers will read a paper on "The Incidence of Tuberculosis in the Pneumoconiosis of Coal-miners."

A course of twelve lectures on "Recent Advances in Dairy Science" will open on Jan. 22 in the lecture room of the Central Laboratories, Express Dairy Co. Ltd., 133, Euston Road, London, N.W. The course, under the auspices of the Chelsea Polytechnic, is intended both for persons engaged in the control of milk in its preparation for the consumer, and for medical officers of health, public analysts, food chemists, and others concerned with milk as a foodstuff and with public health. Prof. H. D. Kay, F.R.S., director of the National Institute for Research in Dairying, will give an inaugural address on Tuesday, Jan. 15, at 6 p.m., his subject being "The Future of Dairy Research." Fee for the course £1; individual lectures 2s. 6d. Applications should be sent to the Principal, Chelsea Polytechnic, Manresa Road, S.W.3.

On Thursday, Jan. 24, at 3 p.m., Dr. Clarence Crafoord, of Stockholm, will lecture before the Society of Thoracic Surgeons of Great Britain and Ireland on "Congenital Coarctation of the Aorta and its Surgical Treatment." By permission of the President and Council of the College the lecture will be given at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.

At a meeting of the Medical Group of the Association for Scientific Photography, to be held in the Hastings Hall, B.M.A. House, Tavistock Square, W.C., on Thursday, Jan. 24, at 6 p.m., Dr. B. Richardson Billings will give a talk on "Medical Photographer, or Photographing Medico."

Dr. Charles Hill, Secretary of the B.M.A., and Dr. Stark Murray, vice-president of the Socialist Medical Association, will speak on "The State and Your Doctor" in the series "Questions in the Air" in the Home Service programme of the B.B.C. on Jan. 18 at 7.30 p.m.

The Ministry of Health announces that the Civil Nursing Reserve, formed in 1939 to reinforce the nursing services in the event of war, is to be continued for the present. New and improved terms of service came into force on Jan. 1. These are: (1) higher salaries for all members, (2) payment for part-time service, (3) additional leave and travel facilities for certain classes. A special emergency class of the Reserve is also being created. It is for those who, through marriage or for other reasons, cannot do regular nursing work, but who would be ready to give whole- or part-time service limited to an emergency such as a widespread or local epidemic or abnormal pressure on a hospital. Work of this kind will be paid for. Emergency members must have sufficient training to be able to serve as trained nurses, assistant nurses, or nursing auxiliaries, without further nursing instruction. Members of the St. John Ambulance Brigade or the British Red Cross Society holding certain qualifications are eligible to enrol.

Sir Alexander Macgregor, medical officer of health for Glasgow, has been appointed chairman of the Scientific Advisory Committee to the Department of Health for Scotland to fill the vacancy caused by the resignation of Sir John Boyd Orr from the chairmanship on his election to Parliament. The function of the committee is to advise the Secretary of State for Scotland on the application of the results of scientific research to public health administration and to promote medical investigation designed to assist the Secretary of State in the discharge of his responsibilities for the health services in Scotland. Sir John Orr remains a member.

By an alteration in the application of the Control of Engagement Order, 1945, which took effect on Dec. 20, 1945, women pharmacists, dispensers, and drug hands, other than those working in essential undertakings, are free from control. They may take their own steps to obtain employment, and employers are free to engage them without prior permission. The Central Pharmaceutical War Committee has therefore ceased to function as an agency of the Ministry of Labour and National Service for the placing of such persons in employment, and is no longer receiving notices of vacancies. Doctors seeking to engage women dispensers and women dispensers seeking employment with doctors may now do so without reference to that committee.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Treatment of Cough in Pneumonia

Q.—*What is the symptomatic treatment of cough in cases of pneumonia?*

A.—Cough in pneumonia requires treatment: (1) if the cough is unproductive and interfering with the patient's comfort or rest; (2) when the cough is productive but the sputum is so viscid that the cough exhausts the patient without adequate result.

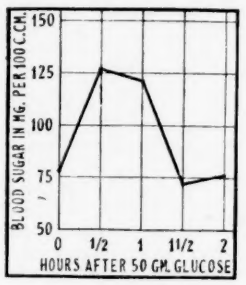
When the cough is not productive it is useless and should be damped down. The milder degrees are best dealt with by the use of a codeine linctus containing, e.g., codeine phosphate (gr. 1/16 to gr. 1/8: 4 to 8 mg.), every four hours. For the more severe types linctus heroin. (gr. 1/32 to gr. 1/8: 2 to 8 mg.) should be used sufficiently often to produce the required result. Often the unproductive cough requires treatment not so much in itself as because of the pain it causes; in these cases the pain rather than the cough should be treated.

When the cough is productive warm alkaline draughts, sod. chlor. and sod. bicarb. āā gr. 15 (1 g.) in 2 oz. (56 c.cm.) of warm water, four-hourly, are most useful. With these a mixture of old matured tinct. camph. co. and oxymel of squill āā gr. 30 (2 g.) should be given. This has been proved to have an expectorant action as well as making the cough less frequent. In some of these cases there is an element of spasm and small doses of pot. iod. and stramonium are of value.

Idiopathic Hypoglycaemia

Q.—*(1) Is there a syndrome associated with what one might call idiopathic hypoglycaemia, and, if so, would the blood-sugar curve shown in the chart come within the presumed limits of such a condition? In this case glucose and ketones were not found in the urine. (2) When insulin is used in small doses is it presumed to exert its tonic effect by increasing the amount of sugar available for combustion in proportion to that stored in the liver as glycogen? Is it possible that a degree of hypoglycaemia (with symptoms) might result from an undue preponderance of the latter function over the former? (3) Could you tell me the average dose of insulin, used as above, and also the approximate high safety limit? Are there any recent publications on this subject, and on hypoglycaemia generally, apart from those dealing exclusively with diabetes and schizophrenia?*

A.—There is such a syndrome. The symptoms are very diverse and it is impossible to do justice to them in a short answer. The initial symptoms are identical with those due to an overdose of adrenaline. Indeed they are probably due to the ready response of the adrenal medulla to a falling blood sugar. Among the symptoms are sweating, weakness, tremor, dizziness, hot or cold sensations, palpitations, precordial pain, dyspnoea, and nausea. If the hypoglycaemia is not relieved by sugar or by the response of the liver to the increased output of adrenaline, other symptoms due to starvation of the nervous system may appear. There may be visual disturbances, incoordination of the limbs, headache, disorientation in time and space, paraesthesiae, convulsions, mental disturbances of many kinds, auditory disturbances, dysarthria, urinary incontinence, and finally coma. The second group of symptoms does not occur in the comparatively mild condition of spontaneous or "idiopathic" hypoglycaemia, but is common after an overdose of insulin and may be seen also in the rare condition of tumour of the islets of Langerhans. The blood-sugar curve, so far as it goes, is just within the limits of normal. This does not, however, exclude spontaneous hypoglycaemia. Many of these patients show normal curves unless the test is carried out for four hours, the abnormal drop being noted between the third and the fourth hour. (See *Journal* leading article of Sept. 30, 1944.)



Insulin has no "tonic" effect. It does, in some but not in all patients, increase the appetite, but usually only when given in a dosage sufficiently high to produce slight hypoglycaemia. In some patients hypoglycaemia produces a remarkable increase in appetite, and it is said that normally well-behaved citizens have, while hypoglycaemic, broken shop windows to get at the food. Others suffer from nausea and have to be persuaded to take sugar. It is impossible to state an average dose for the purpose of increasing appetite, or the approximate maximum, for patients vary so greatly in their reactions. It is usual to give 10 units of soluble insulin before meals, and to increase the dose gradually until success is achieved, or until hypoglycaemia without increase in appetite terminates the experiment. The literature of the subject is enormous. Some of the most useful references will be found in the leading article already mentioned.

Tuberculin-positive Reactors

Q.—*What percentage of ordinary men and women become reactors when tested with human tuberculin? What proportion of them have the disease in an active form?*

A.—The proportion of tuberculin-positive reactors among apparently normal adults has been the subject of a large number of surveys (Whitney, J. S., and McCaffrey, I., *Amer. Rev. Tuberc.*, 1937, **35**, 597). It has been found that about 50 to 90% are positive reactors, according to their environment, the incidence of positive reactors being higher in urban than in rural areas. Judging by recent mass radiography statistics, approximately 0.5% of the adult population have active tuberculosis.

B. coli Cystitis

Q.—*A patient has suffered for the last three years from B. coli cystitis due to catheterization, which became necessary during an attack of intestinal colic. Alkalis, sulphonamides, mandelic acid, autovaccines, etc., in different hospitals, have given only temporary relief. What is the correct treatment?*

A.—The urinary tract should be investigated to exclude the presence of any lesion requiring surgical treatment. If the results are negative, it is next desirable to know whether these successive attacks are due to reinfection or are merely exacerbations of an infection which has persisted throughout. This can be determined by cultivating the urine during a symptom-free interval, not simply by ordinary methods but by cultivating considerable volumes (e.g., inocula of 1 c.cm. in fluid media). If the urine is then bacteria-free—i.e., if the attacks are due to repeated reinfection—attention might with advantage be directed to the state of the bowel; the possibility of some disorder here is suggested by the history of intestinal colic. If the infecting organism is found to be still present even during a symptomless interval, more prolonged treatment with a urinary antiseptic is indicated. The sulphonamides are both the most efficient and the most suitable for prolonged administration. After an initial course of ordinary doses (3 to 4 g. daily) a dose of only 0.25 g. four times a day suffices to maintain the effect, and may be taken for considerable periods without inconvenience or any but the most remote danger of toxic effects. It is presumably known from past experience which of the sulphonamides is effective in this case; for a discussion of their relative merits the questioner is referred to M.R.C. War Memorandum No. 10, 2nd edition.

Penicillin in Chronic Otitis

Q.—*What treatment is advised for chronic otitis media after failure with 30% spirit drops, sulphathiazole powder and boric powder in equal parts, and iodized boric powder? Has penicillin been used in this condition, and what is the most successful method of application?*

A.—Successful treatment of chronic otitis media often depends on factors other than the type of antiseptic used. Local treatment cannot be successful if the middle ear is reinfected by a focus in the mastoid, the nasal sinuses, or the adenoids. Further, it must be possible to introduce the antiseptic into the middle ear. For this the perforation must be sufficiently large and not obstructed by granulations, and the middle ear must be emptied of purulent or mucopurulent discharge by suction or Eustachian inflation. Given these conditions, penicillin will act on sensitive organisms as effectively as in other regions. It may be used in solution or in powder form. The low temperature of solutions necessary to preserve activity may cause temporary vertigo. A note on penicillin in chronic otitis media appeared in the *Journal* of Jan. 5 (p. 13).

Icteric Index

Q.—*Will you please give the following information about the icteric index: (1) renal threshold level; (2) highest recorded figure; (3) usual figure in a marked catarrhal or infective jaundice; (4) average normal figure; (5) figure when clinical icterus is just appreciable; (5) fallacies in estimation?*

A.—Bile appears in the urine when the icteric index is 18 and over. The highest recorded figure is not known, but indices over 400 have been mentioned. The usual figure in a marked catarrhal or infective jaundice is 50 to 100. The average normal figure is 4 to 6, and icterus usually becomes clinically apparent at 15. Fallacies in the estimation may be due to cloudiness or haemolysis in the serum, or staining of the serum by pigments other than bile. A diet rich in vegetables increases the colour intensity of the serum, owing to the presence of carotin, lutein, etc., and the serum may also be coloured by drugs such as mepacrine (atebrin). It should be appreciated that figures for renal thresholds and clinical thresholds are only approximate, as the factors influencing the appearance of bile pigment in the urine, conjunctiva, and skin are complex and variable. Finally, there is not a close correlation between the icterus index and the serum bilirubin content, and high index figures merely indicate in a general way that the serum bilirubin is raised.

Miscarriages and Congenital Syphilis

Q.—*Is a woman showing strong evidence of congenital syphilis prone to have miscarriages as a direct result of her early previous infection? Can a congenital syphilitic, after all evidence of active disease has subsided, later develop acquired syphilis by reinfection?*

A.—If the possibility of third-generation syphilis is admitted—and most people nowadays regard it as proved—there seems no reason why a congenital syphilitic woman should not suffer from miscarriages as a result of her original infection. "Prone" is hardly the word, since the condition must be rare. The answer to the second part of the question is, Yes.

Corneal Ulcer and Glaucoma

Q.—*If atropine is instilled in elderly people with corneal ulcers is there no danger of glaucoma? If so, are such cases to be treated without atropine? Is there any alternative?*

A.—Guttae atropinae 1/2% may be used in old people who have a corneal ulcer. The danger of glaucoma is very slight, whereas in such cases not treated with atropine iritis and secondary glaucoma may follow. The certainty of improving the condition outweighs the very problematical danger of glaucoma from the atropine. If the patient has a tendency to primary glaucoma, homatropine 1% could be used initially. If no rise of tension resulted atropine increasing in strength from 1/4% should be employed. In all cases of corneal ulcer it may be necessary to distinguish between glaucoma from the

mydriatic and glaucoma due to iritis or iridocyclitis. The decision often carries a heavy responsibility, since the treatment of the two conditions is entirely different.

Sex Hormones and Infertility

Q.—*What is the value of injections to increase fertility in husband and wife, each aged about 40? It is not advisable to do any of the usual tests on either. I am now using progesterone, 1 mg. weekly, and testosterone propionate 1 mg., also weekly.*

A.—The causes of infertility are so many and so varied that it is doubtful whether any treatment is justified without some sort of preliminary investigation. The usual tests are certainly "advisable," but presumably they have been refused by the couple in question. In that case there is much to be said for refusing treatment. The administration of progesterone to the woman presupposes that the fault is an inadequate preparation of the endometrium, by the corpus lutem, for the embedding of the ovum—in other words; that the woman is becoming pregnant but the uterus will not harbour the blastocyst. If such is the case, and it is not very likely, then the progesterone should be given during the latter half of the cycle only and in larger doses more frequently; 1 mg. weekly can have little, if any, effect, good or bad. In favour of giving testosterone to the man, it could be argued that it might increase sex desire, but this again is unlikely. There is also some evidence that small doses can stimulate the testicular tubules, but in general it can be stated that in large doses, or in small doses continued for any length of time, testosterone depresses spermatogenesis. The most that can be said for this side of the case is that the amount of testosterone given is so small that, unless it is continued for a long time, it is probably doing no harm.

Infertility is not often due to hormone deficiency *per se*, and the treatment employed here has little, if any, scientific basis. It might be regarded as a placebo and therefore of some psychological benefit, but for such a purpose many cheaper and more suitable alternatives come to mind. Even if a pregnancy occurs it will be in spite of treatment rather than because of it. The blind and empirical treatment of infertility is unsatisfactory. The indiscriminate use of sex hormones without any evidence to show that the patient is deficient in such hormones is always to be deprecated, and particularly where infertility is concerned.

Sticking-plaster

Q.—*What are the constituents of common adhesive sticking-plaster? Why is it called zinc oxide plaster, and why is zinc oxide included in it? On being removed it very often leaves particles of the adhesive material on the skin; why not use some other material —for example, the American "Scotch tape"—in which the adhesive agent always prefers its own backing to the skin?*

A.—The spread of common adhesive sticking-plaster consists essentially of crêpe rubber and resins, together with various plasticizers and fillers. This is still available, if required, for special purposes, such as those in which the presence of metal is undesirable, but zinc oxide has been found to be particularly suitable as a filler, and is now usually incorporated in the plaster for this purpose, quite apart from any dermatological advantages it may provide. It has, therefore, become known as zinc oxide adhesive plaster. At the present time, of course, a proportion of synthetic rubber is being used in place of the crêpe rubber, and it seems to be even better, in some cases, than the natural product, and leaves less residue on removal. We understand that the basis of American plaster is very similar to that of the British, but the method used in applying the spread to the backing differs in the two countries, and it is recognized that by using the American process a plaster is produced which leaves less residue on removal than the plaster made by the British process.

INCOME TAX

Ceasing to Reside in the United Kingdom

"M.D." intends to cease practice on March 31, 1946, and reside abroad permanently.

*** He will rank as a British resident for 1946–7, will be liable on income arising in this country, and on any income arising abroad while he is in this country, but will be entitled to the advantage of the full personal, etc., allowances. In subsequent years he will rank as a non-resident. Tax will be due, and presumably be collected by deduction at source, on income arising here—except interest on Government Loans which have been issued on the understanding that interest thereon will not be liable if the income of a foreign resident—but not on income arising abroad. He will be entitled, not to the full amount of the personal, etc., allowances but to the proportion thereof represented by the ratio of the amount of income liable to British tax to the amount of the total income, whether liable or not.

LETTERS, NOTES, ETC.

Venereology

Dr. LOWELL WEBB (Bournemouth) writes: Dr. Robert Cook (Nov. 3, p. 634) suggests that the word "venereology" should be replaced by "astartology," but this is merely playing with names, for Roman Venus is identical with Semitic Astarte, who is equated with Egyptian Isis, upon whom have descended the attributes of Hathor, the original goddess of motherhood in its purest form, which later became debased into the type of "love" usually associated with the names of Venus and Aphrodite. In fairness to the latter it should be remembered that she was only secondarily a courtesan and primarily a lady doctor: a herbalist whose special remedy was the mandrake—the original love-apple—which she wore on her girdle as a prescription for fertility and easy parturition. If only her feminine weaknesses are to be recalled and not her medical virtues then the name of Venus is appropriate for the nomenclature of "love" disease, for the deity was bisexual—as also were the mandrakes—with a female form and a bearded male counterpart, and thus aptly becomes the symbol of both the sexes in their "venereal" misfortunes.

Suggestible Warts

Dr. N. HOWARD JONES (London, W.) writes: In your "Any Questions?" (Aug. 25, p. 271) a correspondent asking advice on the treatment of multiple warts is told that "they may be cured by suggestion or clear up spontaneously. . . ." This answer has remarkable, indeed revolutionary, implications. If warts can be cured by *suggestion*, may not this method of treatment be applied to other tumours? Again, does not the success of psychotherapy in the treatment of warts suggest that this tumour may perhaps be the incarnate expression of a neurosis? Developing this line of thought further, may not the quality of malignancy of a cancerous tumour be sought in the tenebrous regions of the subconscious, whence it might be exorcised by deep psychotherapy? Tempting as it is to speculate further upon this new and exciting application of psychotherapeutic endeavour, I am deterred by one small point that seems to require elucidation. How does the expert who answered this question distinguish between those warts which are "cured by suggestion" and those which "clear up spontaneously"—or, in his concluding words, "may at any moment vanish without a trace"?

Service Conditions and the Ethical Code

"HIPPOCRATES" writes: I was consulted recently by a dental officer attached to one of the armed Forces who had the misfortune to scratch his finger while attending to a patient and to develop a syphilitic sore at the site of the injury. At the voluntary hospital to which he had been referred for investigation he was treated with great consideration, care being taken to preserve as much secrecy as possible in view of his professional status, but his medical officer colleagues, to whom he had, of course, reported the matter, appeared to treat it as a joke. He was then sent to a Service hospital for treatment, and the driver of his vehicle refused to carry his case when he saw which department he was destined to enter. No attempt was made to soften the blow to a professional colleague who had contracted the disease accidentally in the execution of his duties, and he had to line up with the other patients of all ranks for his injections, which were administered by N.C.O.s, apparently without any direct supervision in the absence of a medical officer. He was therefore exposed to the risk of recognition at some future date by fellow-patients from all parts of the country. I understand that several dental officers have had similar misfortune and similar treatment, but having no desire to advertise the facts, which might damn them afterwards in their professional life, they have suffered in silence. If this is true—and I have no reason to doubt the veracity of my patient—it would appear that Service conditions tend to produce a much lower ethical code than that which is current in civilian practice, and the dental profession must have a very poor opinion of us.

Medical Advisers to Boys' Clubs

The appeal for medical help in boys' clubs which appears in our correspondence columns is certain of a ready response. There is no surer way towards the achievement of a virile and healthy nation than the encouragement of social and sporting instincts in boys. Some now in later life still remember with gratitude what they owe to the playing fields and the river; and though boys in industrial areas may not have the same opportunities we should all like to help them to make the most of those they have. In any boys' club "the doctor" holds a position of peculiar responsibility and regard, especially if he was once an athlete himself. His judgment can guard the exuberant spirits from over-exertion and encourage those who tend to fall behind. Here is a fine opportunity to mould and develop the raw material of our future race.